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The Association does not accept the responsibility for the opinions of contributors. Offensive personalities must be avoided.

William Martin Searby

William Martin Searby, fifty-fifth President of the American Pharmaceutical Association, was born at Croft, Lincolnshire, England, January 21, 1835, where he also received his early education.

When fifteen years of age he passed his apprenticeship examination with the Pharmaceutical Society of Great Britain. In 1855 he entered the laboratory of the Royal Pharmaceutical Society of Great Britain at the Square, London, where he was granted special advantages by Mr. Braithwaite, Professor Redwood's assistant, in charge of the laboratory.

He passed the major examinations in 1856 at Apothecaries' Hall, London, and thereafter engaged in the drug business with his brother, Wright Searby, at Norwich. Four years later he came to Victoria, B. C., where he opened a pharmacy and continued in business here until 1865, when he located in San Francisco.

The fire, following the earthquake of 1906, destroyed the several stores Professor Searby was interested in, his home and with it his library and other valuable personal belongings. The climax of his trials came in the loss of his life companion, whose death was hastened by their heartrending experiences.

It was largely through Professor Searby's efforts that the California Pharmaceutical Society and California College of Pharmacy were organized; to these he always remained loyal and in them was ever a sincere and earnest worker. The California Pharmaceutical Society bestowed many honors upon him and several times chose him for presiding officer. He was dean of the California College of Pharmacy and held the chair of Materia Medica up to the time of his demise.

Professor Searby's activities in the American Pharmaceutical Association date from 1882 and terminated with his death October 7, 1909. He served with distinction in various capacities and invariably discharged the duties of office conscientiously and efficiently. In 1907 he was elected president of the Association and presided over the deliberations of that body at the meeting in Hot Springs.

He was kind and courteous, very considerate of others, but if he differed in opinion with friends, he unhesitatingly expressed his views and unflinchingly stood for whatever he thought just and right. "The beauty and purity of his domestic life was a setting for his character: His graceful method of speaking, with his clearness in teaching, made him a leader."

Contributed and Selected

THE BRITISH PHARMACOPŒIA OF 1914.

From a British Point of View.

DR. FRED. B. KILMER.

The British citizen, and particularly the British pharmacist, is quite liable to manifest some restlessness whenever any new phase or change is brought into his daily routine. Hence, after a period of about sixteen years, the appearance of a new edition of the British Pharmacopœia has had an upsetting influence upon practitioners of medicine, and of pharmacy, and as is usual with the Britisher, his uneasiness finds its outward manifestation in the form of lengthy communications to the press, and in this particular case in numerous papers before medical and pharmaceutical meetings.

It is true that the new Pharmacopœia was issued at an inopportune time. It was originally scheduled to appear at a time about coincident with the opening of the great European war, but the official publication was postponed until the last day of December, 1914.

Many pharmacists are of the opinion that the publication might well have been deferred until the war was over, and some even go so far as to say that "no great injury would have been inflicted if the issuance had been postponed indefinitely."

A prominent feature of the publication of this edition was that, concurrently, there appeared numerous guides, handbooks and commentaries which seemed to convey the impression that the newly revised work was not in itself entirely complete. Immediately upon its publication there also appeared the usual number of medical and pharmaceutical critics, who assailed it from almost every standpoint, one of them even going so far as to state that it was in its essence simply a wholesalers' Pharmacopœia, the result of an organized effort on the part of the wholesale trade, combined with an autocratic tendency on the part of certain physicians whose recommendations had been accepted. A very prominent pharmacist in Scotland stated that "the benefits arising from all of the changes are nil, and the folly of some of them will be apparent when several people have been poisoned."

On the other hand, it is charged that it is a physicians' Pharmacopœia, and that the pharmacist had little or no hand in its revision. There is some force in this statement when we consider that the revision of the British Pharmacopœia is by virtue of an Act of Parliament vested in the General Medical Council, a body made up entirely of medical men. In the present revision the Council had recourse to a so-called Pharmacopœial Conference made up of members of its own body and five pharmacists recommended by the Pharmaceutical Societies of the United Kingdom, also of a Committee of Reference in Pharmacy nominated by the Pharmaceutical Society of Great Britain and Ireland.

It would appear that the pharmaceutical bodies were without power in the work of revision, and it is claimed that they had but little influence in the present production. Significant also is the fact that when the revision was all over but the shouting, the Pharmaceutical Society of Great Britain took the following action:

"Having regard to the highly unsatisfactory position of pharmacists in relation to the production of the British Pharmacopœia, this Society should give no further assistance to the work of revision under present conditions."

Taking up in detail some of the criticisms which have been propounded by the users of the new British Pharmacopœia, we find, as might be expected, several strong objections to alterations, readjustments, additions and eliminations; in other words, there would naturally arise in the British mind an objection to any change.

The additions, to the number of forty-three, consist in the most part of pharmaceutical preparations and substances which are well known. Of course the critics have been free to ask the question, "why was one preparation included and another not included?"

The complaint is made that some of the substances omitted are still in frequent use. Among these is the world-wide household remedy—saffron.

A strong protest has arisen in regard to some of the alterations in names, but the revision authorities have claimed that this alteration was, for the most part, a modification, with the intent of giving a more exact definition, and in some instances the alteration of the name is due to a modification of the process.

A feature of some of the alterations is that a number of the solid extracts heretofore known as alcoholic extracts (being hard pasty extracts), now appear in the Pharmacopœia as dry extracts, and in certain instances are standardized. This feature has, in a great measure, been the subject of commendation.

Alteration in the composition of galenical preparations has called forth both praise and criticism. It has been conceded that the bases of ointments have been improved, as well as the bases of various lozenges, and the revisers claim that the alterations in the composition of galenical preparations have been arrived at as the result of careful experimental work.

A flood of criticism has arisen in respect to the alterations in potency. Ten galenical preparations have been increased in strength, some of them it is stated have been dangerously increased. For example—the tincture of aconite strength has been doubled, the tincture of opium has been increased one-third, and the tincture of strophanthus has been increased four times. Indeed, the increase in strength has been mainly in very potent preparations.

Thirteen preparations have been made weaker. A notable decrease in strength is that of the emplastrum belladonnæ; it is now one-half the former strength. The tincture of digitalis is one-fifth weaker, and the tincture of nux vomica is half the former strength. The remarkable, and so-called "dangerous," alteration in the fourfold increase of the tincture of strophanthus, has brought out columns of comment. The tincture of opium, or the well known laudanum, has been increased to a strength so as to require the prescription of a medical practitioner, or conformity to the poisons schedule act, before it can be given out.

But attention is called to the fact that the alterations in strength in the British

Pharmacopœia of 1914 have been very small when compared with the last previous revision of 1898. A host of commenters agree that the advance made in the standardization, especially of vegetable drugs, has been disappointing, and that there still remain numerous preparations in which quantitative tests might have been applied with advantage.

For a conservative body the revisers took a long stride forward in adopting the metric system, and as one writer puts it, placed upon the already overburdened dispensers "the honor, the duty and the inconvenience of introducing the metric system into pharmacy." Strong objection has arisen to inconveniences which will arise in dispensing and prescribing, and the calculation of dosage under the changed system.

The book gives a table of equivalents which it is claimed is not consistent. The adoption of average doses has brought about considerable discussion both in medical and pharmaceutical publications. The British Pharmacopœia clearly lays the responsibility for dispensing excessive doses on the shoulders of the pharmacist. The Pharmacopœia states:

"It must be clearly understood that the "doses" mentioned in the Pharmacopœia are not authoritatively enjoined by the Council as binding upon prescribers. They are intended merely for general guidance and represent, in each instance, the average range of the quantities which, in ordinary cases, are usually prescribed for adults. The medical practitioner will exercise his own judgment and act on his own responsibility in respect to the amount of any therapeutic agent he may prescribe or administer. Where, however, an unusually large dose appears to satisfy himself that the prescriber's intention has been correctly interpreted."

The pharmacists are much alarmed over the dangers liable to arise in the liability to excessive doses by reason of the changed system of weights and measures and the changed strength in many potent preparations.

Reams of paper have been filled with condemnation of the adoption by the revisers of the term "mil" (the contraction of millilitre) in the place of cc. to express cubic centimeter. This is characterized by friendly critics as an "unfortunate decision and places the British Pharmacopœia in a very insular position, at variance with all scientific literature and all other Pharmacopœias." It is predicted that the word will not be used in practice.

In reference to the use of the word "mil" as a substitute for c. c. the "Chemist & Druggist" states that it is strange that countries which have never used the metric system in its completeness should begin by making a muddle of one very important part of it. The use of the term "millilitre" and its abbreviation "mil" has never been known either in pharmacy or chemistry in the countries which use the metric system, and why the British should have taken a new and "wrong" line is difficult to understand.

Abbreviations are a feature of the newer British Pharmacopœia, and while the English mind is quite fond of coining abbreviations, critics complain that some of the official ones go beyond the limit for brevity. They are styled as "ugly" and "many of the abbreviations are horrible."

Worthy of attention is the fact that no critic has called attention to errors, and it is claimed that they are remarkably rare, which brings to mind the rather

lengthy table of errata that was published conjointly with the appearance of the Eighth Revision of the U. S. P.

Americans are accused of boasting, but no eulogist on the United States Pharmacopœia ever had the fortitude to reach to the following made in England:

"On the whole the compilers may be said to have succeeded in producing a Pharmacopœia which may be pronounced, without hesitation or reserve, to be the best so far published in this (England) or any other country."

In order to maintain neutrality we place against the foregoing the opinion of a well known German pharmacist, Prof. Raubenheimer, who states that "on the whole the new British Pharmacopœia is no credit to British pharmacy or to pharmacy in general."

A writer in one of the Medical Journals says:

"The new Pharmacopœia has been received very calmly in medical circles. The fact is that its issue has little effect on the present generation of practitioners, whose prescribing habits are fixed and are not to be upset by the edict of the General Medical Council. The alterations are felt as occasion for grumbling rather than gratitude. Pharmacists and students are more concerned than the medical practitioner, and perhaps after all the issue of the new volume is not so earth-shaking an event as its authors imagined it would be."

A very well known British pharmacist writes me:

"I fail to recognize any real advancement medically or scientifically in the new British Pharmacopœia."

One of the most illuminating and candid reviews of the work has been that of George Lunan, F. C. S., who was a member of the Committee of Reference in Pharmacy, and whose high ability is conceded by all. He states:

"This is a national book of medicine. It represents to the practitioner the official guide to his prescriptions, because it represents only ascertained and tried materia medica. These are protected by practical standards for his use."

The British Pharmacopœia for 1914 is an Imperial Pharmacopœia made to suit the needs of the whole Empire; hence it must be conceded that it has been no small task to put together a work adapted to a people of such varied races, and to meet the conditions which prevail in a realm which reaches from the North to the South Pole, and upon which the sun continually shines.

In the multitude of publications dealing with applied medicine, the 1914 British Pharmacopœia stands by itself—typical of the nation, stubbornly progressive, accurate and reliable.

Let us not mistake the attitude of the British pharmacist throughout the world in regard to his Pharmacopœia. After he recovers from his first shock of having a new official book of Materia Medica thrust upon him, and has relieved himself by a few grumblings, he will begin a most careful study of the book. He will know it from cover to cover. There is one trait in the British pharmacist that gives him a high rank in his life work—he knows his Pharmacopœia and his Materia Medica, and he knows it most thoroughly. The British pharmacist will follow the Pharmacopœia as loyally and as devotedly as his fellow compatriots follow the King; he will uphold the Pharmacopœia as bravely as the British soldier upholds the Royal Ensign.

THE PHARMACY AND MATERIA MEDICA OF THE BRITISH PHARMACOPŒIA OF 1914.*

GEORGE M. BERINGER.

The appearance of a revised pharmacopœia of one of the leading nations is an event of general pharmaceutical interest. The importance of such a revision from an American view-point, is greatly enhanced if the pharmacopœia revised is that of a nation whose consanguinity, language and practices are so closely allied to our own as are those of the British Isles. Hence, the appearance of a new British Pharmacopœia during the past year becomes one of the most important pharmaceutical events.

It is apparent that any attempt to review the pharmacy and materia medica of the Fifth Edition of the British Pharmacopœia within the time allotted for a paper presented to a pharmaceutical meeting, must necessarily be cursory and incomplete. Moreover, one is too prone to consider the volume from the view-point of American practice without realizing what has been the aim of the Medical Council and which, in the following statement in the preface, they claim to have accomplished: "has now been able to produce a British Pharmacopœia suitable for the whole Empire." This statement indicates to what extent that ideal of the British government, the solidarity of all of the people of the numerous divisions of the British Empire, has progressed. The present edition displaces not only the edition of 1898, but also the Indian and Colonial Addendum of 1900. The dismissal in the revision of so many of the drugs used exclusively, or nearly so, in the oriental British possessions, indicates the advancement of the movement for uniformity of medical standards and practice throughout the British Empire.

In this revision the Medical Council departed somewhat from the methods of the previous revisions and sought the co-operation of pharmaceutical, chemical and botanical authorities by instituting conferences and committees on reference and thus aimed to obtain information, advice and investigation from many experts outside of the Council.

In this revision the metric system of weights and measures is used throughout, even for the statement of doses, "in the expectation that in the near future the system will be generally adopted by British prescribers." "At the present time students and practitioners of medicine are accustomed to use the metric system in connection with the work of chemical, physical, physiological, pathological and pharmacological laboratories; it will doubtless facilitate the application of science to practice when the same system is used for therapeutic purposes also." We sincerely trust that in this respect the British practitioners of medicine, veterinary medicine, and pharmacy are more ready to adopt this innovation than have been their American brethren in these professions. The term "cubic centimeter" is displaced by "millilitre" and in the statement of doses in the metric system this is abbreviated to "mil" and the fractional portions are "decimil" and "centimil."

In the preface, it is recommended that prescribers cease to employ the long-used

*Read at meeting New Jersey Pharmaceutical Association, 1915.

symbols for drachm and ounce as they are apt to be misread, and are used at times to convey different meanings. The symbol ℥ for example "is to represent sometimes 480 grains, sometimes 437.5 grains and also to represent 1 fluid ounce."

The preface likewise defines what is meant by a percentage solution; "thus a solution of '1 in 10' or '10 per cent.' means that one gramme of a solid or one millilitre of a liquid is contained in ten millilitres of the solution." This statement is not strictly accurate nor is it in accord with the exact meaning of the word percentage.

In considering synonomy, only the most important of the synonyms employed in prescribing have been inserted. Abbreviations of the Latin titles have been adopted and published as a table in the Appendix. In this the revisers were undoubtedly influenced by a foreknowledge of the intent of the U. S. P. IX in this direction.

The acceptance of the principles of "The International Agreement" promulgated by the International Congress for the Unification of the Formulæ for Potent Drugs and Preparations held at Brussels in 1902, has necessitated some changes in this edition of the British Pharmacopœia. The practice of Great Britain as well as America has been to measure liquids by volume and solids by weight and this has been maintained instead of following the custom of continental practice and endorsed by that Agreement, of weighing liquids as well as solids.

The substances added are not numerous and are covered in a list of 43 titles. Cantharidin replaces Cantharis and Mylabris and is used in all of the galenicals in which these drugs were formerly directed, on the basis of the average content of 0.5 percent. of cantharidin in Cantharides which quite likely is the average yield of the pure active principle. This change has necessitated a change in titles of preparations to Acetum Cantharidini, Emplastrum Cantharidini, Tinctura Cantharidini, and Unguentum Cantharidini.

Diluted Hydriodic Acid is admitted for the purpose of making the syrup which is likewise on the list of admissions.

Cassia Fructus, cassia fistula pod, is admitted for the purpose of giving a formula for "Cassia Pulpa," which should more correctly be entitled an Extract.

Senna Fructus, the senna pod, is another new title. Senna pods are official in several of the European pharmacopœias and their use is extending likewise in the United States.

Under the title of Ipomea Radix the Orizaba Jalap Root is admitted with the synonym of Mexican Scammony Root. This has been done to permit its use as a substitute for the true Scammony Root for the preparation of Scammony Resin.

Scammony resin is defined as a mixture of resins obtained from Scammony Root or from Orizaba Jalap Root. This is an unfortunate exhibition of legalizing a specious fraud that has been extensively carried on in the substitution of the chemically different resin of ipomea for that of Scammony. The requirement of "not less than 75 percent. soluble in ether" shows how deliberate the purpose.

Cresol is one of the additions and as a preparation Liquor Cresol Saponatus made with castor oil and potassa soap, a good preparation with which we are not unfamiliar.

Formaldehyde is admitted and Liquor Formaldehydi Saponatus is a soft soap,

(from olive oil and potassium hydroxide), hydro-alcoholic solution of formaldehyde and should prove a useful addition to the antiseptics.

Among Ointments and Ointment bases we note that a formula for benzoinated prepared suet has been introduced and it is recommended that in India this should be employed instead of Benzoinated Lard in making ointments. Unguentum Lanæ Compositum, a mixture of prepared lard 40, wool fat 40, paraffin ointment 20, is a recruit with the synonym of Emollient Ointment. A veteran in American practice, Goulard's Cerate, with a modified formula with camphor omitted, is admitted under the title of Unguentum Plumbi Subacetatis.

The list of deletions is a formidable one of 168 titles. A number of these are oriental drugs that probably have gone out of use because of the change of medical practice in the colonies. There are, however, in this category a number of titles of old friends such as Camboge, Cimicifuga, Coca Leaves, Conium Fruit and Leaves, Crocus, Elaterium, Humulus, Jaborandi, Lupulin, Mezereum, Musk, Pareira, Physostigma, Sarsaparilla and Sumbul.

Among the preparations dismissed, we note a number of decoctions and infusions and the concentrated liquores introduced in the edition of 1898 for the purpose of permitting of the extemporaneous preparation of decoctions and infusions. It would seem that the "Liquores Concentrati" met with little favor and further that English practice is gradually being weaned from the copious draughts of infusions and decoctions of drugs.

Our British brethren have shown some further appreciation of the advantages of powdered extracts and have adopted the powdered form for a few additional extracts, notably, the extracts of belladonna, hyoscyamus, nux vomica and opium. The diluent directed in the extracts of belladonna and hyoscyamus is the powdered respective drug of determined alkaloidal content. In the extracts of nux vomica and opium, calcium phosphate is directed as the diluent and in the extract of strophanthus, milk sugar. The degree of fineness of the powder specified under extract of belladonna is a number 20 sieve. This certainly will yield a rather coarse powder. The menstruum directed for extract of belladonna and hyoscyamus is 70 percent. alcohol. A stronger alcoholic menstruum is necessary to obtain a powdered extract of proper strength and permanent fineness of powder. Where formulæ are given for both the liquid and the dry extracts of the same drug, the word "Siccum" is added to the title of the latter. It would seem to have been preferable to have uniformly used this term in the titles of all such dry extracts.

In the Latin titles 38 changes have been made. Most of these are of a minor character and for the purpose of more exactly defining the official articles or preparations. Aloe now covers both Aloe Barbadensis and Aloe Socotrinæ of the previous edition, and Senna Folia includes the former Senna Alexandrina and Senna Indica. Kino Eucalypti replaces the less appropriate Eucalypti Gummi, and Oleum Chaulmoograe replaces Oleum Gynocardiæ. Among preparations, we note that Tinctura Iodi Fortis replaces Liquor Iodi Fortis and Tinctura Iodi Mitis replaces Tinctura Iodi. The stronger contains 10 Gm. of Iodine and 6 Gm. of Potassium iodide in 100 millilitres and corresponds closely to the Tincture of Iodine of the International Agreement. The Tincture of Iodine of the British

Pharmacopœia 1898, contained only 2.5 Gm. each of iodine and potassium iodide per 100 millilitres; hence, this is now to be known as the "weak."

Important changes in the strength of 41 preparations have been made. The reason for many of these is apparent; for some, however, the reason is not evident. The endeavor to harmonize the potent galenicals with the standards of the International Agreement accounts for the changes in Syrup of Ferrous Iodide, a number of the tinctures and in Mercury Ointment.

Syrup of Ferrous Iodide contains 5 percent. of ferrous iodide and 10 percent. of glucose as a preservative.

Tincture of Aconite is about twice as strong as that of the Pharmacopœia of 1898, and is directed to be made with 70 percent. alcohol and then assayed and standardized so that 100 mils contain 0.04 Gm. of the ether soluble alkaloids. This formula agrees in the menstruum with that directed by the Brussels protocol, and starts with 150 Gm. of aconite yielding doubtlessly a good preparation, but it would be difficult to establish that it is "approximately the same strength as the Tincture of Aconite of the International Agreement."

Tincture of Belladonna is to be made by percolating 100 Gm. of the powdered leaves with 70 percent. alcohol and in addition is standardized to contain 0.035 Gm. of the alkaloids in 100 millilitres.

Tinctures of Colchicum and Digitalis likewise agree closely with the requirements of the protocol.

Tincture of Nux Vomica is to be made from the Liquid Extract by diluting and is standardized so that 100 millilitres contain 0.125 Gm. of strychnine.

Tincture of Opium is made from the Gum Opium and standardized so that 100 millilitres contain 1 Gm. of anhydrous morphine. The product will correspond to the International Agreement in alkaloidal (not alcoholic) content and will be about one-third stronger than the Laudanum of the previous edition.

In Tincture of Strophanthus, we have a straddle. In attempting to comply with the requirement of the protocol 100 Gm. of ground seeds and 70 percent. alcohol are directed, but the de-fatting of the drug with ether is prescribed. The foot-note states that "this tincture is made with four times the proportion of seeds ordered by the previous pharmacopœia and it is approximately the same strength as the Tincture of the International Agreement." This formula is, however, subject to several criticisms. It is entirely proper to de-fat the drug before making the tincture, but the de-fatting should be with purified petroleum benzin and not with ether because the latter extracts a portion of the strophanthin. The percolation with ether should not be "until the liquid passes through colorless," but should be continued until a few drops evaporated from filter paper leave no greasy stain. Alcohol of 90 or 95 percent. will not entirely extract strophanthus in the proportion directed and much less will alcohol of 70 percent. serve this purpose. A more serious error is the direction to discontinue the percolation with the alcohol when 500 millilitres are obtained and then to add sufficient 70 percent. alcohol to obtain 1 litre. Under these conditions, the drug will probably be not more than one-half extracted.

The diluted acids, with the exceptions of Diluted Acetic Acid (5 percent. H $C_2H_3O_2$ and Diluted Hydrocyanic Acid (2 percent HCN), are now uniformly

10 percent. of the respective absolute acids, instead of the odd proportions of the 1898 Pharmacopœia which had Diluted Hydrochloric Acid 10.58 percent. HCl.; Diluted Nitric Acid 17.44 percent H NO_3; Diluted Phosphoric Acid 13.8 percent H_3PO_4; and Diluted Sulphuric Acid 13.65 percent H_2SO_4.

In the text, the Aromatic Waters are directed to be made by distilling the water in some cases with the drug and in other cases with the volatile oil. In Chapter XII of the Appendix under Alternative Preparations Sanctioned for Use in Tropical, Sub-tropical, and Other Parts of the British Empire, it is stated, "Aquæ Olei Anethi, Anisi, Carui, Cinnamomi, Foeniculi, Menthæ Piperitæ, Menthæ Viridis.—Each of these Waters may be prepared by triturating the corresponding oil with twice its weight of Calcium Phosphate and five hundred times its volume of Distilled Water and filtering the mixture. In tropical and sub-tropical parts of the Empire, these Aquæ Olei may be used in place of the corresponding Aquæ of the Text of the Pharmacopœia."

It is exceedingly doubtful if this territorial restriction will be observed by the practical pharmacists of Great Britain, once they become as fully acquainted as are their American brethren, with the easy and practical method of preparing saturated aqueous solutions of these aromatic oils by the use of an insoluble distributing medium. It will be difficult to convince the practical pharmacist that such waters as peppermint and spearmint must be prepared by distilling the oil and water instead of a simple process of solution or that these waters of the British Pharmacopœia are superior because of such exposure to heat.

The unsatisfactory and tedious process for Extract of Ergot of 1898, is replaced by a process in which the ergot is extracted by water, the aqueous extract concentrated and alcohol added; after standing the liquid is filtered off and evaporated to proper consistence.

Extractum Filicis Liquidum is made with ether and corresponds to our oleoresin of male fern. Description, tests and assay process for filicin are introduced and the product is standardized as containing 20 percent. of filicin.

Extractum Glycyrrhizæ is to be made by macerating liquorice root with chloroform water, expressing and heating the expressed liquid to 100°, then straining and evaporating. The Liquid Extract is made by a similar process, the alcohol being finally added only as a preservative.

Extractum Hydrastis Liquidum is to be prepared with 60 percent. alcohol (instead of 45 percent. in 1898) and to be standardized to contain 2 Gm. of hydrastine in 100 mils of the product.

Extractum Ipecacuanhæ Liquidum is to be prepared by extracting with 90 percent. alcohol without the treatment with lime as directed in the pharmacopœia of 1898 and is to be standardized so that 100 mils shall contain 2 Gm. of alkaloid.

Extractum Nucis Vomicæ Liquidum is to be prepared with 70 percent. alcohol, the fat removed by treatment with melted hard paraffin, and the product standardized to contain 1.5 Gm. strychnine in 100 mils. No attempt is made to recover the alkaloid removed by the paraffin de-fatting.

Four formulas are given for hypodermic injections. While there may be good reason to endorse a standard formula for a hypodermic injection of ergot, there is a better reason that would require that this be directed to be dispensed in steril-

ized and sealed ampoules. In this day of universally used, well prepared and stable hypodermic tablets, it seems unnecessary to include in a modern pharmacopœia formulæ for hypodermic injections of morphine, strychnine, etc.

Liquor Ethyl Nitritis is retained as the title for a preparation containing from 2.5 to 3 percent. of ethyl nitrite in a mixture of 95 volumes of absolute alcohol and 5 volumes of glycerin. There is also official the Spiritus Ætheris Nitrosi containing 1.53 to 2.66 percent. by weight of ethyl nitrite in alcoholic solution. The need for both is not understood.

The volatile oils are well defined and generally the necessary tests for identity and quality are clearly given. The assay processes are the simplest that can be satisfactorily applied. Instead of an elaborate process for determining the amount of cineol, the Oils of Cajeput and Eucalytus are assayed by the phosphoric acid method and for pharmacopœial purposes this is probably all that is necessary. In Oil of Lemon, the citral is determined by the hydroxylamine method.

For several decades, at least, the trend of pharmaceutical authorities has been toward a clearer differentiation of the classes of galenicals, toward defining within proper lines each class of preparations and the grouping of the individual formulæ, wherever possible, under such defined classes. It was to be expected that in this revision, these proper classifications would be respected and followed. Yet we find Oleo-Resin of Male Fern, "an oily extract" entitled "Extractum Filicis Liquidum" and printed along with the extracts despite the statement in the preface that "Most of the Liquid Extracts are of such a strength that one hundred millilitres represent one hundred grammes of the drug employed." An acacia emulsion of Castor Oil is classed with the Mistura and printed with such formulas as Chalk Mixture and Compound Mixture of Iron.

The treatment of the botanical drugs is disappointing. There is lacking that thoroughness of description that one would expect in a modern pharmacopœia prepared by those who have every opportunity to be acquainted with the progress of science and the great advances in pharmacognostic knowledge since the appearance of the previous edition sixteen years ago.

The names of the authors of the binomials adopted are given, but in no case is the family or other botanical classification given. The references to the works where the medicinal plants are figured, a feature of the Pharmacopœia of 1898, is omitted and there is good reason to consider that such information is out of place in a pharmacopœia.

In some cases the definition of the drug assumes the style of a rubric and states the alkaloidal standard, in other cases, with equally important drugs this is omitted, as occurs for example in the definitions of Belladonna Root, Hydrastis and Hyoscyamus.

Any one who has occasion to examine crude drugs knows that they are very rarely free from admixtures. Sometimes these admixtures are other portions of the plant yielding the drug and at other times they are unavoidable or accidental foreign substances. No attempt whatever is made to either recognize the presence of such admixtures or to fix limitations therefor.

The descriptions of the macroscopical characters of the drugs show very little improvement over those of the former edition. It is rather the exception that the

description of the histology or microscopical structural characteristics of the drug or of its powder are given with any degree of thoroughness, and the common adulterants and their characteristics are not even mentioned.

While in some drugs a limit of ash has been added, in many others equally important this has been ignored. As examples, the ash of Lobelia has been fixed in this revision at "not more than 12 percent.," but for Hyoscyamus no limit of ash is given.

The tenacity with which the English people adhere to the tenets and practices of their fathers and forefathers, their aversity to innovations and the making of radical changes, is a recognized trait of the English. This conservatism of the nation, is reflected in their pharmacopœia and while we criticize in a friendly spirit some of its defects and lack of progress, we recognize that it is a safe and practical book of standards for most of the substances prescribed in British medical practice.

MILS VS. CUBIC CENTIMETERS.*

JOSEPH P. REMINGTON.

The new United States Pharmacopœia will authorize the use of the word Mils to replace the word Cubic Centimeters, and at first there will be undoubtedly some criticism and comment upon the change. The last United States Pharmacopœial Convention recommended publicity of changes of this kind in order that users of the United States Pharmacopœia would become familiar with the subject in advance.

The use of the word Mil is not new, but the first use in a Pharmacopœia occurred in 1914, when the British Pharmacopœia adopted it, and it is likely that its use will become universal in time, at least in the English language. Mil is, of course, the first three letters of the French name originally given to the thousandth part of a liter—Milliliter. The use of the word Cubic Centimeter is really an anachronism and the United States government through its bureau of standards (see Bulletin No. 47, page 12) has declared the word Cubic Centimeter as a misnomer.

Very careful experiments by the government physicists have determined the fact that the Cubic Centimeter is larger than the Milliliter by the inconsiderable fraction of 0.000027. In pharmacy, in chemistry, and in applied chemistry, this difference is negligible, but everyone must have regretted the cubic centimeter blot on the harmony and beautiful simplicity of the metric system. The unabbreviated word Cubic Centimeter is too long for everyday use by the chemists and pharmacists of the world.

In America nine out of every ten scientific men mispronounce the word and use "sontee-meter," and it seems that this habit is very difficult to break up. It should properly be called "centi-meter" as the word is anglicized. It is a gross grammatical error to use a word which is half Franch and half English. If one must use the French, it should be pronounced "sonte-matr."

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* Read at the meeting of the Pennsylvania Pharmaceutical Association, June, 1915.

In actual practice it will be noticed that at chemists' congresses and conventions nearly everyone reads Cc. as "See-sees." These are some of the results following the original error of adopting such a word as Cubic Centimeter officially. In the Government Tables, Ml is used, but Ml is difficult to pronounce, hence an abbreviation can just as well take in a vowel—the i—, and so we have the first syllable of three letters of the word Milliliter. Now Mil can be used with a period indicating that it is an abbreviation, but it is much better to adopt the word Mil, as it will be called, and do away with the period. This will also permit the use of the plural Mils. If the period is retained, it would be awkward and improper to use the plural as Mil.s.

It has been stated by a few of the critics and those who always oppose changes that it will be somewhat confusing because we have already a word in the English language "Mill" which is a United States coin, which we never see—the tenth of a cent; but when this word was coined, we had also the word "mill," used for a building for grinding substances, for students who get diplomas from certain schools, and even for pugilistic bouts, and other equally interesting words; but we will have no other Mil in the English language which is spelled with one l and there is no likelihood of mistake or error when the word is used either in speaking or in writing.

Now, practically, we have only to remember never to say Cubic Centimeter or use the abbreviation Cc. again. As previously said, the change is only a change of name. It does not involve any calculations or changes in formulas. Cross out Cc. and write Mil. Never again say sonti-meter, say, Mil; but it cannot be expected that this reform will immediately go into effect and it will take a little time for all of us to become accustomed to the change.

THE RELATION OF CHEMICAL CONTROL TO INDUSTRO-CHEMISTRY.*

EUGENE L. MAINES, PHR. D., SC. D.

Successful industries are, for the greater part, dependent upon the chemical laboratory and chemical control.

The excellent laboratory equipment and staff of such establishments as the General Electric Co., Solvay Process Co., Illinois Steel Co., Pennsylvania Railroad Co., Chicago Packing Houses, Parke, Davis Co., etc., proves the truth of this statement.

The constant growth in efficiency of these manufacturing plants is largely the result of organization, and occupying a most important place in such organization, is the research staff, analytical and general testing laboratories.

True, some plants have no chemist at all, and no testing apparatus. Even in Germany there are many plants chemically uncontrolled, working empirically, by formula.

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* Presented at the Eighth Annual Convention of the American Association of Pharmaceutical Chemists held in Rochester, N. Y., May 31st to June 5th, 1915. Delivered as a plea for the formation of a "Scientific Clearing House."

It is not difficult, however, to demonstrate that a chemical laboratory pays and pays well. This point has been learned these many years by all progressive superintendents and managers. The cost of a laboratory (although small) shows conspicuously on the books, while the profits made possible by a laboratory may be lost among other figures unless a special search is made for them. Under these circumstances men of little insight will continue to operate their plants without proper scientific control, until by the competition of better managed plants they are forced to adopt modern methods or go out of business.

The successful establishments, as has already been cited, are fully aware of the necessity of chemical control, this being evidenced by their well regulated scientific departments.

When it is realized that these departments should investigate all new processes, constantly improve the existing ones; correct and explain irregularities of manufacturing operations; invent new processes; that they should determine the valuation and exact composition of all raw materials and finished products, the fixing of yields, the necessary control of different stages of many processes, etc., it becomes clear that if these constructive forces are to be used to the fullest it must be through the creation of an organization that will automatically cause every department in that organization to coöperate with the research and analytical branches.

The duties of a research department may be summarized as follows:

Investigating cheaper raw materials, new products, increased yield, new uses for products manufactured, greater purity of products manufactured, utilization of wastes, more efficient structural material, reduction of cost of production, apparatus, etc.

The department should be equipped with research laboratories where work can be carried on from a test-tube scale to manufacturing in a large enough way to test practical difficulties and costs.

The analytical department should control all work relating to sampling and analysis, and its duties may be given generally as follows:

The analysis and sampling of all raw materials and finished products, as well as the analyses necessary in the intermediate steps of some processes in order to insure proper control. It should furnish figures used to calculate yields, and perform all the analytical work in connection with investigations, which often involves the necessity of inventing new methods or investigating and adopting better methods. It should do all analytical work that will aid the manufacturing, sales, purchasing and construction departments, and coöperate with the sales department in investigating complaints.

These, briefly, are the duties of the modern scientific department.

We will now consider the result of this chemical control.

As you have already seen, the chemist or chemical engineer maintains a place in almost every industry and phase of life. He has reduced the cost of living by discovering cheaper edibles and the production of other products from the waste material of former times, such as oleomargarine from packing house material, oils from cotton seeds, glycerin and soap from waste fats, etc.

In mining he has classified the minerals, enabling by simple tests to ascertain the value of each. He has discovered and invented means of reducing the death rate in coal mining by the use of fire damp indicators, rescue outfits, Davey Safety Lamps, and the regulation of explosives.

He has utilized waste coal by converting it into tar, coke, fuel and illuminating gases, ammoniacal liquor, fertilizers, and many colors used in the dyeing industry.

From the coal gas industry we obtain as by-products, coke, gas, carbon, tar, ammoniacal liquor, and spent purifying material.

In gas manufacture we have as subsidiary products, dyes, sweetening principles, and photographic developers from coal tar, while water-gas yields light oils of the benzole series, creosoting oils, naphthalene oils, road compounds and pitches.

From wood he has made paper pulp, ethyl alcohol, methyl alcohol, rosin, tars, potash and many other products. Waste pine wood, stumps, etc., are now converted into turpentine and other by-products, thus saving the valuable timber for lumber.

In the iron industry the flue dust (about 3% of total ore charged) is collected, heated in the oxidizing atmosphere of a portland cement rotary kiln, and is then recovered in nodular forms, carrying over 60% of iron. This alone represents a saving of 1,250,000 tons of iron ore per year.

Slag, which was formerly a waste product is now converted into slag cement which differs very little in chemical analysis, color, specific gravity, fineness or in usefulness from that made by ordinary methods. The potash industry has been controlled by the German Potash Syndicate for many years, but the possible production of potash on a commercial scale, from the kelp of the Pacific coast may yet cause the Germans some uneasiness.

Nitrogen is recovered from coal by the by-product coke ovens and in Germany it is being abstracted from the atmosphere.

During the past quarter of a century chemists have been developing new uses for new materials very rapidly.

A few years ago chromium had little use and metallic manganese was a curiosity but today these metals are used by the ton as pure metals in alloys for electrical resistance, replacing great quantities of German silver and other expensive alloys. Tantalum and Columbium ores were merely an interest in museums, but today they are being worked for the Tantalum (used as a filament for incandescent electric lights and as a substitute for platinum) and undoubtedly the Niobium will soon be utilized.

In sanitation he has done much to reduce contagion, etc., through the application of the pure food laws and the regulation of public water supply and sewage disposal.

Alcohol, formerly produced from corn, can now be produced from saw-dust, the by-products of sugar works and waste sulphite lyes.

Formerly, kerosene was the chief product sought in petroleum and the lighter and heavier fractions were allowed to go to waste. It is now converted into gas, gasoline, naphtha, kerosene, lubricating oils, asphaltic road material and carbon for electrical purposes. The recent discoveries of Dr. Rittman in the petroleum industry may eventually give the United States a supremacy in the dye-stuffs in-

dustry that has so long belonged to Germany, while the increased yield of gasoline may prove an important factor in paying the costs of the process.

In no phase of chemical industry, however, does chemical control play a more important part than in the manufacture of medicine. The doctor must rely upon the chemist to give him reliable and efficient medicinal products. Thus, both drug and finished product must be assayed, tested and standardized so as to insure the physician with a reliable remedy. When it is considered that many drugs are emergency remedies, the life of a patient often depending upon their activity, it is not difficult to understand why the chemistry of medicine is one of the most important branches. But, chemistry, even at its present best, is incapable of assaying the active principle of every drug, as there exists in certain drugs superactive principles of so delicate a composition that they break down under analysis.

At this point we must determine, not "how much of you is present?" but "how much can you do?" Here must the analyst bow to the pharmacologist and depend upon him to ascertain and determine the physiological activity of such drugs as are not amenable to chemical assay. In this way drugs are compared and adjusted to certain definite and uniform standards, thereby making it possible for the physician to determine in advance the actual effect of a given quantity.

Besides the standardization of products, the chemical laboratory is constantly adding new and valuable remedies to the realm of materia medica and therapeutics.

Today we are in the very midst of the unfolding of the secrets of immunity and prophylaxis. In fact, we are almost impatient if each succeeding number of our scientific journals does not inform us of some new discovery or means of attack against the common enemy—disease.

Probably more has been achieved within the past quarter of a century than in the whole history of medicine. Certain diseases have almost been eliminated and plague and pestilence no longer terrify; for we have the confidence that their causes, even though still unknown in some cases, are material and conquerable, and that their incidences and ravages may be prevented by measures already known or surely to be discovered.

The recent discoveries in chemistry are so all-important and even revolutionary and its position as a science is so comprehensive that one scarcely dare make any statement or prediction concerning it.

The United States, which until recently has lagged behind some other nations in chemical research, is beginning to atone for past indifference. During the past few years the number of students pursuing courses in chemistry at our various colleges has steadily increased. Despite this fact this shows a comparatively small increase in view of the enormous increase in the industrial operations of the country, constantly demanding trained men.

No small part of Germany's industrial progress has been due to the discoveries of her men of science. It may be that Germany has lent more encouragement to scientific research, but there are signs that her supremacy may be challenged as our young men appreciate the advantages to be derived from the pursuit of what has been termed the most practical of sciences.

These results accomplished by the chemical laboratory and chemical control are little short of wonderful. It has been the work of the chemist, physicist, metal-

lurgist, and engineer, all applying the broad principles of chemistry to industry that has made such important and far-reaching development.

Waste has, in some industries, been reduced to a minimum and their efficiency is great indeed, yet in no single case has perfection been reached.

R. J. STRASENBURGH CO., Rochester, N. Y.

DRUGS AND THE MAN.*

DR. ARTHUR E. BOSTWICK, LIBRARIAN, ST. LOUIS PUBLIC LIBRARY.

The graduation of a class of technically trained persons is an event of special moment. When we send forth graduates from our schools and colleges devoted to general education, while the thought of failure may be disquieting or embarrassing, we know that no special danger can result, except to the man who has failed. The college graduate who has neglected his opportunities has thrown away a chance, but he is no menace to his fellows. Affairs take on a different complexion in the technical or professional school. The poorly trained engineer, physician or lawyer, is an injury to the community. Failure to train an engineer may involve the future failure of a structure, with the loss of many lives. Failure to train a doctor means that we turn loose on the public one who will kill oftener than he will cure. Failure to train a lawyer means wills that can be broken, contracts that will not hold, needless litigation.

Congressman Kent, of California, has coined a satisfactory word for this sort of thing—he calls it "mal-employment." Unemployment is a bad thing. We have seen plenty of it here during the past winter. But Kent says, and he is right, that malemployment is a worse thing. All these poor engineers and doctors and lawyers are busily engaged, and every thing on the surface seems to be going on well. But as a matter of fact, the world would be better off if each one of them should stop working and never do another stroke. It would pay the community to support them in idleness.

I have always considered pharmacy to be one of the occupations in which malemployment is particularly objectionable. If you read Homer badly it affects no one but yourself. If you think Vera Cruz is in Italy and that the Amazon River runs into the Arctic Ocean, your neighbor is as well off as before; but if you are under the impression that strychnine is aspirin, you have failed in a way that is more than personal.

I am dwelling on these unpleasant possibilities partly for the reason that the Egyptians displayed a skeleton at their banquets—because warnings are a tonic to the soul—but also because, if we are to credit much that we see in general literature, including especially the daily paper and the popular magazine, *all* druggists are malemployed. And if it would really be better for the community that you should not enter upon the profession for which you have been trained, now, of course, is the time for you to know it.

* A valedictory address delivered at the commencement exercises of the St. Louis College of Pharmacy, May 19, 1915, wherein a layman presents his views anent influences affecting pharmacy.

There seems to be a widespread impression—an assumption—that the day of the drug is over—that the therapeutics of the future are to be concerned alone with hygiene and sanitation, with physical exercise, diet, and mechanical operations. The very word "drug" has come to have an objectionable connection that did not belong to it fifty years ago. Even some of the druggists themselves, it seems to me, are a little ashamed of the drug part of their occupation. Their places of business appear to be news-agencies, refreshment parlors, stationery stores—the drugs are "on the side," or rather in the rear. Sometimes, I am told, the proprietors of these places know nothing at all about pharmacy, but employ a prescription clerk who is a capable pharmacist. Here the druggist has stepped down from his former position as the manager of a business and has become a servant. All of which looks to me as if the pharmacist himself might be beginning to accept the valuation that some people are putting upon his services to the community.

Now these things affect me, not as a physician nor as a pharmacist, for I am neither, but they do touch me as a student of physics and chemistry and as one whose business and pleasure it has been for many years to watch the development of these and other sciences. The fact that I am addressing you this evening may be taken, I suppose, as evidence that you may be interested in this point of view. The action of most substances on the human organism is a function of their chemical constitution. Has that chemical constitution changed? It is one of the most astonishing discoveries of our age that many, perhaps all, substances undergo spontaneous disintegration, giving rise to the phenomena now well known as "radio-activity." No substances ordinarily known and used in pharmacy, however, possess this quality in measurable degree, and we have no reason to suppose that the alkaloids, for instance, or the salts of potash or iron, differ today in any respect from those of a century ago. How about the other factor in the reaction—the human organism and its properties? That our bodily properties have changed in the past admits of no doubt. We have developed up to the point where we are at present. Here, however, evolution seems to have left us, and it is now devoting its attention exclusively to our mental and moral progress. Judging from what is now going on upon the continent of Europe, much remains to be accomplished. But there is no reason to believe that if Cæsar or Hannibal had taken a dose of opium, or ipecac, or aspirin, the effect would have been different from that experienced today by one of you. This is what a physicist or a chemist would expect. If the action of a drug on the organism is chemical, and if neither the drug nor the organism has changed, the action must be the same. If we still desire to bring about the action and if there is no better way to do it, we must use the drug, and there is still need for the druggist. As a matter of fact, the number of drugs at your disposal today is vastly greater than ever before, largely owing to the labor, and the ingenuity, of the analytical chemist. And there are still great classes of compounds of whose existence the chemist is assured, but which he has not even had time to form, much less to investigate. Among these may lurk remedies more valuable than any at our disposal today. It does not look, at any rate, as if the druggist were going to be driven out of business from lack of stock, whether we regard quantity or variety. To what, then, must we attribute the

growth of the feeling that the treatment of disease by the administration of drugs is on the decline? From the standpoint of a layman it seems to be due to two facts, or at least to have been strongly affected by them: (1) The discovery and rapid development of other therapeutic measures, such as those dependent on surgical methods, or on the use of immunizing serums, or on manipulations such as massage, or on diet, or even on mental suggestion; and (2) the very increase in the number and variety of available drugs alluded to above, which has introduced to the public many new and only partially tried substances, the results of whose use has often been unexpectedly injurious, including a considerable number of new habit-forming drugs whose ravages are becoming known to the public.

The development of therapeutic measures that are independent of drugs has been coincident with popular emancipation from the mere superstition of drug-administration. The older lists of approved remedies were loaded with items that had no curative properties at all, except by suggestion. They were purely magical—the thumb-nails of executed criminals, the hair of black cats, the ashes of burned toads and so on. Even at this moment your pharmacopœia contains scores of remedies that are without effect or that do not produce the effects credited to them. I am relying on high therapeutical authortiy for this statement. Now when the sick man is told by his own physician to discard angle-worm poultices, and herbs plucked in the dark of the moon, on which he had formerly relied, is it any wonder that he has ended by being suspicious also of calomel and ipecac, with which they were formerly classed? And when the man who believed that he received benefit from some of these magical remedies is told that the result was due to auto-suggestion, is it remarkable that he should fall an easy prey next day to the Christian Scientist who tells him that the effects of calomel and ipecac are due to nothing else than this same suggestion? The increased use and undoubted value of special diets, serums, aseptic surgery, baths, massage, electrical treatment, radio-therapeutics, and so on, makes it easy for him to discard drugs altogether, and further, it creates, even among those who continue to use drugs, an atmosphere favorable to the belief that they are back numbers, on the road to disuse. Just here comes in the second factor to persuade the layman, from what has come under his own observation, that drugs are injurious, dangerous, even fatal. Newly discovered chemical compounds with valuable properties, have been adopted and used in medicine before the necessary time had elapsed to disclose the fact that they possessed also other properties, more elusive than the first, but as potent for harm as these were for good. Many were narcotics or valuable anesthetics, local or otherwise, which have proved to be the creators of habits more terrible than the age-long enemies of mankind, alcohol and opium. When the man whose wife takes a coal-tar derivative for headache finds that it stills her heart forever, the incident affects his whole opinion of drugs. When the patient for whom one of the new drugs has been prescribed by a practitioner without knowledge of his idiosyncrasies reacts to it fatally, it is slight consolation to his survivors that his case is described in print under the heading, "A Curious Case of Umptiol Poisoning." When a mother sees her son go to the bad by taking cocaine, or heroin, or some other drug of whose existence she was ignorant a dozen years ago, she may be par-

doned for believing that all drugs, or at least all newly discovered drugs, are tools of the devil.

And this feeling is intensified by one of our national faults—the tendency to jump at conclusions, to overdo things, to run from one evil to its opposite, without stopping at the harmless mean. We think we are brighter and quicker than the Englishman or the German. They think we are more superficial. Whatever name you give the quality it causes us to "catch on" sooner, to work a good thing to death more thoroughly and to drop it more quickly for something else, than any other known people, ancient or modern. Somebody devises a new form of skate roller that makes roller-skating a good sport. We find it out before anyone else and in a few months the land is plastered from Maine to California with huge skating halls or sheds. Everybody is skating at once and the roar of the rollers resounds across the oceans. We skate ourselves out in a year or two, and then the roar ceases, the sheds decay and roller-skating is once more a normal amusement. Then someone invents the safety bicycle, and in a trice all America, man, woman and child, is awheel. And we run this good horse to death, and throw his body aside in our haste to discover something new. Shortly afterward someone invents a new dance, or imports it from Spanish America, and there is hardly time to snap one's finger before we are all dancing, grandparents and children, the cook in the kitchen and the street-cleaner on the boulevard.

We display as little moderation in our therapeutics. We can not get over the idea that a remedy of proved value in a particular case may be good for all others. Our proprietary medicines will cure everything from tuberculosis to cancer. If massage has relieved rheumatism, why should it not be good also for typhoid? The Tumtum Springs did my uncle's gout so much good; why don't your cousin try them for her headaches? And even so, drugs must be all good or all bad. Many of us remember the old household remedies, tonics or laxatives or what not, with which the children were all dosed at intervals, whether they were ill or not. That was in the days when all drugs were good: when one "took something" internally for everything that happened to him. Now the pendulum has swung to the other side—that is all. If we can ever settle down to the rational way of regarding these things, we shall discover, what sensible medical men have always known, and what druggists as well as mere laymen can not afford to neglect, that there is no such thing as a panacea, and that all rational therapeutics is based on common sense study of the disease—finding out what is the cause and endeavoring to abate that cause. The cause may be such that surgery is indicated, or serum, or regulation of diet, or change of scene. It may obviously indicate the administration of a drug. I once heard a clever lawyer in a poisoning case, in an endeavor to discredit a physician, whom we shall call Dr. Jones, tell the following anecdote: (Dr. Jones, who had been called in when the victim was about to expire, had recommended the application of ice). Said the lawyer:

"A workman was tamping a charge of blasting-powder with a crowbar, when the charge went off prematurely and the bar was driven through the unfortunate man's body, so that part of it protruded on either side. A local physician was summoned, and after some study he pronounced as follows: 'Now, if I let that bar stay there, you'll die. If I pull it out, you'll die. But I'll give you a pill

that may melt it where it is!' In this emergency," the lawyer went on to say, "Dr. Jones doubtless would have prescribed *ice*."

Now the pill to melt the crowbar may stand for our former excessive and absurd regard for drugs. The application of ice in the same emergency may likewise represent a universal resort to hydrotherapy. Neither of them is logical. There is place for each, but there are emergencies that can not be met with either. Still, to abandon one method of treatment simply because additional methods have proved to be valuable, would be as absurd as to give up talking upon the invention of writing or to prohibit the raising of corn on land that will produce wheat.

No: we shall doubtless continue to use drugs and we shall continue to need the druggist. What can he do to make his business more valued and respected, more useful to the public and more profitable to himself? For there can be no doubt that he will finally succeed in attaining all these desirable results together, or fail in all. Here and there we may find a man who is making a fortune out of public credulity and ignorance, or, on the other hand, one who is giving the public more service than it pays for and ruining himself in the process; but in general and on the average personal and public interest run pretty well hand in hand. Henry Ford makes his millions because he is producing something that the people want. St. Jacob's Oil, once the most widely advertised nostrum on the continent, cost its promoters a fortune because there was nothing in it that one might not find in some other oil or grease.

What then, I repeat, must the pharmacist do to succeed, personally and professionally? I welcome this opportunity to tell you what I think. My advice comes from the outside—often the most valuable source. I have so little to do with pharmacy, either as a profession or as a business that I stand far enough away to get a bird's-eye view. And if you think that my advice, based on this view, is worthless, it will be a consolation to all of us to realize that no force on earth can compel you to take it.

It is doubtless too late to lament or try to resist the course of business that has gone far to turn the pharmacy into a department store. But let me urge you not to let this tendency run wild. There are side-lines that belong properly to pharmacy, such as all those pertaining to hygiene or sanitation; to the toilet, to bodily refreshment. I do not see why one should not expect to find at his pharmacist's, soap, or tooth-brushes, or sponges. I do not see why the thirsty man should not go there for mineral water as well as the dyspeptic for pills. But I fail to see the connection between pharmacy and magazines, or stationery or candy. By selling these the druggist puts himself at once into competition with the department stores. There can be no doubt about who will win out in any such competition as that. But I believe there is still a place in the community for any special line of business if its proprietor sticks to his specialty and makes himself a recognized expert in it. The department store spreads itself too thin—there is no room for intensive development at any point of its vast expanse. Its general success is due to this very fact. I am not now speaking of the rural community where there is room only for one general store selling everything that the community needs. But my statement holds good for the city and the large town.

Let me illustrate by an instance in which we librarians are professionally in-

terested—the book store. Once every town had its book-store. Now they are rare. We have few such stores even in a city of the size of St. Loius. Every department store has its book-section. They are rarely satisfactory. Everybody is lamenting the disappearance of the old book-store, with its old scholarly proprietor who knew books and the book-market; who loved books and the book-business. Quarts of ink have been wasted in trying to account for his disappearance. The Public Library, for one thing, has been blamed for it. I have no time now to disprove this, though it is very clear to me that libraries help the book trade instead of hindering it. I shall simply give you my version of the trouble. The book-dealer disappeared, as soon as he entered into competition with the department store. He put in side lines of toys, and art supplies, and cameras and candy. He began to spread himself thin and had no time for expert concentration on his one specialty. Thus he lost his one advantage over the department store—his strength in the region where it was weak; and of course he succumbed. If you will think for a moment of the special businesses that have survived the competition of the department store, you will see that they are precisely the ones that have resisted this temptation to spread themselves and have been content to remain experts. Look at the men's furnishing stores. Would they have survived if they had begun to sell cigars and lawn-mowers? Look at the retail shoe stores, the opticians, the cigar stores, the bakers, the meat markets, the confectioners, the restaurants of all grades! They have all to compete with the department stores, but their customers realize that they have something to offer that can be offered by no department store—expert service in one line, due to some one's life-long training, experience and devotion to the public.

I do not want the pharmacist to go the way of the book dealers. Already some of the department stores include drug departments. I do not see how these can be as good as independent pharmacies. But I do not see the essential difference between a drug department in a store that sells also cigars and stationery and confectionery, and a so-called independent pharmacy that also distributes these very things.

I am assuming that the druggist is an expert. That is the object of our colleges of pharmacy, as I understand the matter. As a librarian I want to deal with a book man who knows more of the book business than I do. I want to ask his advice and be able to rely on it. When I have printing to be done, I like to give it to a man who knows more about the printed page than I do. When I buy bread, or shoes, or a house, or a farm I like to deal with recognized experts in these articles. How much more when I am purchasing substances where expert knowledge will turn the balance between life and death. I have gossiped with pharmacists enough to know that all physicians do not avoid incompatibles in their prescriptions, and that occasionally a combination falls into the prescription clerk's hands, which, if made up as he reads it would produce a poisonous compound, or perhaps even an explosive mixture. Two heads are better than one, and if my physician ever makes a mistake of this kind I look to my pharmacist to see that it shall not reach the practical stage.

I recognize the great value and service of the department store, but I do not go there for my law or medicine; neither do I care to resort thither for my

pharmacy. I want our separate drug stores to persist, and I want them to remain in charge of experts.

And when the store deals in other things than purely therapeutic preparations—which I have already said I think probably unavoidable, I want it to present the aspect of a pharmacy that deals also in toilet preparations and mineral water, not of an establishment for dispensing soda-water and soap, where one may have a prescription filled on the side, in an emergency. And when the emergency does arise, I should have the pharmacy respond to it. It is the place where we naturally look in an emergency—the spot to which the victim of an accident is carried directly—the one where the lady bends her steps when she feels that she is going to faint. In hundreds of cases the drug store is our only standby, and it should be the druggists business to see that it never fails us. There are pharmacies where a telephone message brings an unfailing response; there are others to which one would as soon think of sending an inquiry regarding a Biblical quotation. To which type, do you think, the public will prefer to resort?

Then there are those little courtesies that no retail business is obliged to offer, but that the public has been accustomed to expect from the druggist—the cashing of checks, the changing of bills, the furnishing of postage stamps, the consultation of the city directory. There can be no reason for resorting to a drug store for all these favors except that the pharmacist has an enviable reputation as the man who is most likely to grant them. And yet I begin to hear druggists complaining of the results of this reputation, of which they ought to be proud; I see them pointing out that there is no profit on postage stamps and no commission for changing a bill. They intimate, further, that although it may be proper for them to put themselves out for regular customers, it is absurd for strangers to ask for these coutesies. I marvel when I hear these sentiments. If this popular impression regarding the courtesy of the druggist did not exist, it would be worth the expenditure of vast sums and the labor of a lifetime to create it. To deliberately undo it would be as foolish as to lock the door in the face of customers.

I do not believe that in St. Louis the pharmaceutical profession is generally averse to a reputation for generous public service, and I base my belief on some degree of personal knowledge. The St. Louis Public Library operates about sixty delivery stations in various parts of the city. These stations are all in drug stores. The work connected with them, though light, is by no means inconsiderable, and yet not one of the druggists who undertake it charges the library a cent for his space or his services. Doubtless they expect a return from the increased attractiveness of their places to the public. I hope that they get it and I believe that they do. At any rate we have evidence here of the pharmacist's belief that the bread of public service, cast upon the waters, will sooner or later return.

You will notice that I am saying nothing about advertising. One would think from the pharmaceutical papers, with which I am not unfamiliar, that the druggist's chief end was to have a sensational show window of some kind. These things are not unimportant, but I do not dwell on them because I believe that if a druggist realizes the importance of his profession; if he makes himself

a recognized expert in it; if he sticks to it and magnifies it; if he makes his place indispensable to the community around him, the first point to which the citizens resort for help in an emergency, an unfailing center of courtesy and favor—he may fill his window with toilet soap, or monkeys, or with nothing at all—there will still be a trodden path up to his door.

Gentlemen, you have chosen as your life work a profession that I believe to be indispensable to human welfare—one of enviable tradition and honor and with standing and reputation in the community that set it apart, in some degree from all others. And while I would not have you neglect the material success that it may bring you, I would urge you to expect this as a result rather than strive for it as an immediate end. I would have you labor to maintain and develop the special knowledge that you have gained in this institution, to hold up the standard of courtesy and helpfulness under which you can best do public service, confident that if you do these things, business standing and financial success will also be added unto you.

THE SCIENCE OF PHENOMENA.*

J. ROEMER.

An interesting presentation relating to the "Science of Phenomena, as applied to drugs, basing the action of such on the energy within the atoms and molecules, which through electro-motive forces of the body in reaction is transformed into kinetic energy, resulting in the Phenomena of Drug Action."

In presenting the subject, "The Science of Phenomena," it may appear that the title is inadmissible, according to the usual interpretations accredited to science and that there is an error in its meaning, but an analysis will prove that such is not so and moreover that previous scientific interpretations are inadequate in explanation.

That explanation of phenomena has always been the objective of science is manifest from investigation of methods employed in endeavors of explanation in the realms of its varied applications in search for truth, but that it in itself can become and is the ultimate science, has until recently not received the recognition that it merits.

Phenomena of science are the accumulated array of facts which through investigation and research are continuously amassing without consistent or reasonable co-relations to one another and therefore unless it finds the means to relate and co-relate these phenomena as concepts to the mind progress is slow, therefore in designating the subject, *"The Science of Phenomena,"* we not only postulate a title but open up a channel to the better understanding of their relations.

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*Read before New York Branch, A. Ph. A.

The subject becomes one of direct concern to all manifestations as presented in the universe, but whether from cause to effect or from effect to cause cannot be fully known without a clear conception as to *why* of all.

That this great and momentous question is ever and ever farther removed from the immediate knowledge of man is axiomatic, for the greater increase of that knowledge ever becomes the incentive to ever greater research.

In order to thoroughly encompass facts deducible as knowledge, we must formulate a starting point and follow a procedure of correct interpretation, then safely conclude that from out of all confusion we will yet see the light in answer to that greatest of all questions concerning science, the *why* of things.

The subject as *"The Science of Phenomena"* finds application to all that is, but the object in this presentation is to restrict and confine its application to that division of science which relates to medicine and to the accepted designation, pharmacology.

To answer the question *why* is the object of all investigation and research and until today there is no definite answer to much that concerns medicine.

As postulate to a starting point we must begin with mind and likewise following phenomena through their varied phases must also end with mind.

The mind operates through a controlling force; that which it apprehends is a concept, apprehension itself is a result of perception and perception a result of conscious sensory impression, and knowledge becomes the direct manifestation of this phase system.

Without a something to apprehend there would be no need of mind, much less a use, and to supply that something in its widest, broadest and most comprehensive latitude we will accept it as the universe and all the manifestations as concepts conveyed or imparted by whatever forces may operate we will name phenomena.

These then become the fundamentals which to the mind we must relate and co-relate and by successive steps through interpretations prove the greatest of all questions.

We can know phenomena *as manifestations only by physical aspects which result from inherent physical properties.*

Physical properties, however determined, are cause per se of phenomena and in light of known knowledge are nothing more and nothing less than *natural properties*, it is therefore axiomatic that by and through natural properties alone can we obtain knowledge.

As human beings and the more so as scientists we are concerned with correct interpretations, we cannot create, we cannot alter, we cannot destroy, we are ourselves wholly controlled by what we know to be fundamental natural laws; these laws, through invariability and immutability in operation give rise to phenomena through forces, and these forces are the influences which determine all.

In entering the world governed and controlled by forces, science must concern itself with the operations of these forces, for it is through correct interpretation of such alone that we are able to prove cause to effect and conversely effect to cause.

Evolution in understanding has been slow to progress for the materialistic

conception of the ultimate of matter has long held the stage and as a barrier has denied even the presumption to other reasoning.

With the advent of the dissociation theory and its comprehensive underlying fundamental as explained by electronic phenomena and a clear insight into the physics of radium, we are entering a field in which we are beginning to appreciate that we are no longer concerned with matter as substance, but that far beyond this lies the reality which as manifestation to us is a phenomenon of *energy*.

In the element radium we find the master key that will unlock the storehouse to greater and wider knowledge and much that has been misunderstood or not understood at all will find herein the beacon light to the greater sphere of our universe.

At the January meeting of this Branch details of the history of discovery and of the peculiar properties of radium were thoroughly presented, yet in order not to lose sight of the wonders that this element reveals to us it may not be amiss to tabulate the known physical properties.

As men of science looking for truth and as scientists concerned with elucidation and solution of problems that appear complex, we must have the courage to recognize and to accept the truth when we find it, and regardless of any prejudice, regardless of any bias or of any ideas or opinions, we must follow the trail, no matter how, for it will take us from the beaten paths of the present misconceptions.

And so radium has given us a truth, we are familiar with the electronic conception and we can thereby explain its apparently peculiar properties; these in general are as follows:

Ray radiations, consisting of alpha, beta and gamma.

Ray emanations, which in loss are regenerated within the atom; these emanations are subject to reaction, to decompositions, and these decomposition products give rise to other elements or pseudo elements.

Through observation and experiment and by calculation we know that this is a phenomenon that continues for thousands of years and have ascertained that these radiations and emanations are *energy charges*.

To sum up the known properties of the energy radiations as observed in beta rays, we know they are:

Negatively charged electrical particles.

Their velocity is about one hundred thousand miles a second.

Their mass is equal to one-eighteen hundredth of the mass of hydrogen.

They represent mass and inertia.

They discharge electrified bodies.

They are deflected in opposite direction from the positive charge by the magnet.

They give rise to light and heat in bodies which they strike.

They communicate mechanical motion to bodies.

They are absorbed by bodies in direct proportion to the density of those bodies.

In other words the atom of radium is an atom of *energy*, a potential energy that is inherent or intrinsic, and this energy is available as kinetic energy and through transformation is dissipated into heat and light.

Leaving out of consideration for the time being the physical manifestations of the other rays we can thus graphically illustrate the beta rays as follows:

Radium	*Beta Rays as Energy*	*Potential*	*Kinetic*	*Heat* / *Light*

This being true of the element radium with evidence to support that truth, it becomes a truth transcendent that it is *true for every element.*

Natural law is universal and invariable, gravitation acts upon all things in like manner, there is no exception, and as controlling force is immutable, and likewise the forces which govern and control the element radium are the forces which govern and control every other element.

To this in our daily applications in the field of what we as yet choose to designate chemistry we have ample opportunity of demonstrating the truth of this proposition, we can consider any reaction occurring and in the light of the electronic conception we can no longer maintain that elements per se as substance react with one another, but must correctly interpret these phenomena as the interchange of energies of the elements, or in other words the action and reaction of their electrical charges.

Without the necessary influences which free these energies we can have no phenomena of reactions and it therefore follows that through correct interpretation the whole structure upon which chemistry is reared becomes one of exchange of physical forces and must be viewed as the "science of pure physics."

Chemistry must give way, for in the light of a better and more comprehensive understanding there is *no* chemistry. This as a science has been built up from the past imagination of the atom as ultimate of matter without a clear conception that beyond this phase lies the true solution of the reality in the electron, which electron we now conceive as electrical charge.

Each and every statement will no doubt find its need for defense, and to those who have followed the past ideas in relation to elements it will become most difficult to overthrow old conceptions and accept the new. It is not my purpose to argue with needed proofs in relation to what has been given. This is but preliminary to that which I have chosen as the subject for tonight and even that is but a detail to the greater application of the theory of energy.

The subject *"Phenomena of Drug Action"* therefore becomes a detail of the greater subject *"The Science of Phenomena,"* and as this is related to pharmacology, I'll endeavor to confine myself to that part.

In order more fully to appreciate the shortcomings of each and every previously advanced theory of drug action it may not be amiss to give a little consideration to the ideas prevalent today in that respect.

There are numerous theories held as well as defended as to how drugs act. Let me make the bold statement that each and every one is based upon misconception and therefore misunderstanding and consequently all are erroneous; we have no one theory that explains the action of all drugs, and as to the question *why* drugs act there now is no light upon this subject.

In the presentation tonight of the subject, *"The Phenomena of Drug Action,"*

as embodied in the "*Theory of Energy,*" with full and comprehensive conception of the fundamentals, there will be given, I believe for the first time an adequate idea of the reason for such action, not alone answering the question how, but also encompassing the reason *why,* and in following the elaboration or unfolding of this theory it will at the same time give a clear understanding in relation to these actions by showing they could not act otherwise.

That there is dissatisfaction with present ideas and theories of drug action is apparent; when giving instruction or in trying to predicate the action, failure results in obtaining such information, and however much we may desire to hold to ideas that drugs act, we cannot overlook the fact that there is something lacking to support our ideas; there is something lacking; drugs do not act, they never did act, they never can act.

That the many theories advanced, supported and even defended may argue for correctness for any given class of drugs is the very proof which defeats such theory in not being able to encompass all drugs, and it is admitted that there is no positive law or rule upon which to date we can account for the varied phenomena as manifested by the administration of drugs.

If a theory cannot account for every fact relating to that theory, it then, by reason of that failure becomes untenable for any fact.

To analyze the shortcomings of every previously advanced theory would take too much time. Sufficient to note and emphasize is the point that if we had an adequate theory that alone would be sufficient and we would not have the many that are extant today.

Yet, without bearing in mind the salient points of the more prevalent ideas, it may be difficult to comprehend their applications and shortcomings: one theory assumes action upon physical properties of solubility, rate of diffusion and absorption. These may influence phenomena of action, yet the theory falls in failing to co-relate allied drugs, as example, acetanilide and antipyrine, and further does not give information of how action is brought about.

Another theory assumes properties based upon chemical constitution, another upon molecular arrangement, another combines the two, then we have the biochemical theory and a few more of less import. They each relate a few drugs to answer their particular application and were the time longer it can readily be proven that each and every one in light of facts is untenable, and the conclusion is inevitable that science has not given us a clear understanding of what is meant by drug action.

In the scope of inclusion for the theory to be advanced there are no exceptions and all drugs, whether of animal, vegetable or mineral origin, find the true reason for phenomena produced. *They do not act.*

There is so much confusion and so much that is fundamentally erroneous in conception, in term, in phraseology, in explanation and in definition in medicine, pharmacology, biology, bacteriology, chemistry and physiology, and in short in every subject related to medicine that any attempt to reconcile the conflicting ideas is impossible, so in order more fully to comprehend the application of *the theory of energy,* in relation to phenomena, we must divest our minds of all the misunderstanding and clear it from the cobwebs of present conception so that

we can grasp the import of the reality and apply the correct interpretations to the facts.

To give you a little idea of the shortcomings of the branch of science as medicine, let me cite a few fundamentals whose answers medicine has not yet supplied and in which that science is wofully cast adrift.

The purpose in submitting these questions in this relation is not for criticism but for the reason of obtaining a better understanding for which the *theory of energy* will supply the answers and supply them correctly.

Why is the blood a circulating fluid?

Why does it contain two kinds of cells?

Why would not either the white or red alone do?

Why are these cells circulating and not anchored?

Why are they circulating in a media called plasma?

When pus is the result of any suppuration, why is it that the white cells alone constitute that pus?

What is the cause and the reason of an elevation of temperature due to infection or suppuration?

Why is the stomach secretion acid?

Why is it hydrochloric acid? Why not nitric or phosphoric, or citric or mayhap a specific acid of individual human characteristic?

Why is sodium chloride a constituent of the secretion of the stomach?

Why is not the stomach alkaline and the intestine acid?

Why is the normal temperature within the range of 98.4 and 98.6 degrees F. and not 90 or 100 degrees F.?

If tubercle bacilli are the cause of tuberculosis, why is not every one susceptible? Why is one being immune and another not? This has never been answered, even with the theory of immunity.

Why has not the cause of nephritis long since been answered, surely there is data enough?

Why has not science given the why of serum reactions?

Why has not science as yet found the origin of cancer?

Why is the air we breathe three-fourths nitrogen and only one-fourth oxygen? To say that the nitrogen acts as dilutent to the energetic oxygen is not the reason; it is only a guess and a very crude one at that.

Nitrogen performs a most important function, it has its purpose and there is a most substantial reason for its wide prevalence.

So in light of this we must acknowledge that science hasn't given us a great amount of knowledge that is fundamental. It has been said that if we could answer these questions we could explain life itself. However this may be, I will say that we can answer them, we can answer them correctly and the facts to verify are so strikingly and palpably evident that it is nigh unbelievable that we have missed them for so long.

This subject is so vast that you will appreciate the utter inability of entering into the details of even a few of the salient points given and the presentation of the detail *"Phenomena of Drug Action"* as a part of the *"Science of Phenomena"* becomes a large subject in itself and even in this I must confine myself to a very limited field for want of time.

We first must disabuse our minds that drugs act. This is fundamentally an error and to further maintain that idea is to maintain a contradiction.

It is when we subject substances to given influences that we observe phenomena of action.

If drugs acted we could anticipate the same result within a corpse as we could within the living body. If again the substance of a drug produced an action we must not forget that we would lose that substance, but we know better than that, for we can recover the substance in its entirety, weight for weight, even though it suffers many transformations in its passage through the body.

I am familiar with all the objections that science and medicine as science will advance to account for the difference, but it still remains an unanswered fact that if drugs did act we should obtain like results both in the live body and the corpse; yet strychnine has no more effect upon or within the corpse than has milk sugar or sodium bicarbonate, and when we analyze this fact instead of evading the question we will find the reason *why*, and this will be an answer to a very important fact.

Take a normal healthy living being and if conditions could be such that we could administer a dose of strychnine one minute before death we would observe certain specific phenomena. Now as the result of accident this normal being is killed and one minute after death this body has not had the time to alter any of its organs, nor of its tissues, the blood is still normal and in every respect this body so far as we are able to determine is exactly like the living body, yet if we administer a hundred times the quantity that we did one minute before death, there is no phenomena observed or produced. We can go still further, we can cause absorption by the body fluids, we can by force diffuse it through the blood stream, but no matter what we do there is no response.

This then becomes a most important link and we must account for something in the living body that the dead body does not possess. There is a difference and in this difference we find the reason, everything material is the same, exactly the same, and the difference is that the corpse has lost its power to transmit *energy*. What kind of energy? It is not its potential energy for that in the short space of time has not been dissipated and is still locked up within the cells, but failing in its power of transforming and transmitting this potential we can only conclude that the loss is *Kinetic*. The flow having been interrupted or prevented and unless the power exists to re-establish that flow the potential alone is useless to maintain life.

This kinetic energy is an electromotive force, it acts and responds to reaction, to government and control through influences and agencies of like electromotive forces and action and reaction resultant are mathematically proportionate to the degree of influence.

No action of any substance per se can influence it, and unless a substance possess an electromotive force inherent or acquired that substance is wholly inert or passive to influence a manifestation as phenomena of action.

I won't go into the explanation of the system nor of the manner in which this electromotive force is conducted or distributed throughout the body, but I will ask you to accept it as fact that this force is stored within the brain cells

and from there through radiation carried to every cell of the body and that as a direct current of energy flow.

Accepting this, how can we now apply this idea in relation to what we understand, although erroneously, "drug action"?

Strychnine is	$C_{21}H_{22}N_2O_2$
Morphine	$C_{17}H_{19}NO_3$
Cocaine	$C_{17}H_{21}NO_4$
Hydrocyanic acid	C H N
Nitroglycerine	$C_3H_5N_3O_9$

Disregard all ideas of all theories advanced to account for "drug action" and follow the one idea of the energy stored or locked within the molecules of these particular drugs, energy which is potential but which through the influence of the operation of the electromotive force of the body is released and through reaction is transformed into kinetic.

Strychnine then possesses an energy which is capable of producing an alteration of the body current which results in the phenomenon of interruption, increasing in intensity as the amount given increases until a quantity is given whose released energy is greater than the power of the body's energy to overcome, producing the successive phenomena of first activation, or excitation, then spasmodic contraction, then shock and finally death.

Do these actions as phenomena differ in any way from the alternating electric current, first as to power of such current inducing interruption of the body current as manifestation of activation, then through increase spasmodic contraction, then shock and finally if power is still more increased, death?

Does it differ in its phenomena from the phenomena of tetanus?

Does it differ in its phenomena from that produced by radium?

It does not, and in all cases cited, apparently widely divergent, instead of assuming we are dealing with four different conditions we are dealing with one and the same fundamental cause and that is action as manifestation of phenomena and the phenomena are but the results of one and the same energy; potential energy which through influence is converted to kinetic and the kinetic in its powers increased until it overcomes the kinetic energy of the body.

If this is true it may be argued, why not at once determine the potential and through influence of transformation, the kinetic power of energy that any one substance is capable of producing and employ only that one as agent for every condition of abnormality and disease? The question elaborates a far greater reach than at first is apparent; first, complexity of the body in toto containing numerous elements; second, the fact of different influences, and third, the fact that in the atom radium we find different kinds and degrees of energy and each subject to influences of different degrees, yet considered in its broadest aspect, it is not too far a reach to anticipate that when we obtain more knowledge of the subject, that the power locked up in the atoms and the molecules of a substance may accomplish far greater results than even our imagination at present would permit us to deny.

We are entering into a new realm. From ideas of all other theories we can

never hope to fathom the power of energies locked up waiting for science to open. We do know that the atom of radium is controlled by forces; we know that its intrinsic energy in quantity is enormous; we know that this manifests itself in different degrees; we know that it is subject to control by other forces, and as fundamental, the forces that control the atom are the same forces that control the molecule and the forces that control the molecule are the same forces that control the mass, so we must look to the atom for the solution of the many perplexing problems that science today as yet does not appreciate and following the course of the influences which control the atom, we are sure to fathom the reason of the *why?*

To revert to the tabulated list of drugs, we will take morphine. From its chemical constitution we should certainly not be unreasonable to expect this drug to act similarly to strychnine. It contains, like strychnine, C H N O. That the difference in quantities does not give us reason for such wide difference in action must be admitted and that molecular arrangement is wholly an assumption in this instance is also known, but considered in the light of the theory of contained energy we can readily account for its phenomenon as resulting in its power of diminishing the energy of the body and in this manner by suspension causing inaction and if given in too large a quantity causing entire suspension or death.

Cocaine likewise as manifestation possesses its particular degree and kind of energy; our old ideas that it paralyzes nerve endings when locally applied is merely an invention of a phrase to explain what is not understood. Cocaine never paralyzed a nerve. When a nerve is exposed, severed, injured or in any way lacerated, there is a manifestation of pain. When then cocaine is applied the pain ceases, not through any paralysis, but through the result of an energy action which restores equilibrium to that nerve circuit supply.

Administer a lethal dose of hydrocyanic acid and we know that death will follow immediately. Herein we have the most striking illustration of an action so-called which upsets every theory under the old idea of drug action, whether of solubility, rate of absorption, diffusibility, chemical constitution, molecular arrangement or any other advanced idea, the result in death is too swift for any theory to account for the rapidity of its influence, but viewed in the light of what actually takes place that of a transformation of its potential to kinetic energy through influence of reaction to the electromotive force of the body we can account for the power of this nitro compound in like manner as we can account for the released energy of nitroglycerine, and for this we cannot maintain that it is the substance which acts for we know that it is a power of the released energy which possesses a force sufficient to shatter rocks.

It is a matter of no little concern as well to understand why it is that these substances are so energetic. I do not want to digress too much, as this particular phase is another detail of infinite magnitude as another link in the chain of *"The Theory of Energy"* and would take hours to present, but sufficient for the time is the fact that all these substances named contain a common elementary constituent and that is *nitrogen.*

Nitrogen is harmless you will say. We breathe quantities of it every minute. You might also say that albumen contains nitrogen and this is surely innocuous,

in fact so much so that it is the very substance that is the food for embryonic life, and to all this I agree. Nitrogen is the food, per se harmless, also apparently innocuous, but permit me to add that because science has as yet not placed its true function, it is not strange that you should entertain such ideas. The reason that such large quantities exist in the air we breathe, the reason that it is a constituent of albumen and to the other extreme that it is contained in every alkaloid and also the common constituent of each and every seed throughout all plant life are the very reasons that this elementary substance becomes at once the most important substance known in the whole realm of the universe in its specific relation to life.

Nitrogen, not oxygen, is the essential to life. Oxygen is needed, and to a great extent we know the functions it performs, but without nitrogen there would be no life of any kind for it is the fundamental element whose function is to transform the energies which govern and control life. Of this I hope at some future time to tell you something more.

What I want to dwell upon now is the electromotive phase which influences energy action as applied in the idea of "The Phenomena of Drug Action."

Being concerned with drugs as remedial substances or agents we must not overlook the important fact that fundamentally the body is governed and controlled through energies. This through equalized distribution is the reason for health, and when through influences any or all parts do not receive an equal amount needed or required to maintain equilibrium, abnormality and disease are then a consequence.

The human system contains from 65 percent to 70 percent water. This we know is nature's greatest reagent, without which no reaction between the forces of elements would take place; this is the medium which carrying salts in solution effects distribution to each and every cell of the body. Sodium chloride is the predominant salt and from facts proven through physics, we know that sodium chloride is the most perfect electrolyte as neutral salt known in nature; biology and geology both, tell us that life found its origin in the ocean and we know that the water of the ocean contains three and a half times more sodium chloride than all of its other mineral constituents combined, originating under these conditions. We are the product or result of these conditions and considered from these two factors alone, our system then becomes or rather is the ideal system for action and reaction governed by electromotive forces. Added to this the intricate net work of nerves whose function is to convey, conduct and radiate currents, we can readily understand how the body generates, supplies and distributes its electric currents.

In introducing a greater amount of sodium chloride than is needed to maintain an equilibrium, we intensify and excite the influence of the electromotive force of those parts with which it comes in contact. If administered into the stomach it activates that organ to greater activity and passing to the intestines likewise intensifies action and catharsis is the result. Given in solution into the blood stream it intensifies energy flow and the phenomena of its action is wholly through its inherent power as an electrolyte and not because of the substance as sodium or chlorine.

So we must measure the degree of activity of all salines according to their

electrolytic power and in degree as such force is inherent in them as mathematically available energy, we will be able to determine their place in specific order whether they will prove cathartic, purgative, laxative or normalizer.

As substances then we do not, cannot lose them. Transformations to different molecular compounds through reaction may take place, which again, is but the exchange of their physical energies, and it is the energies of the substances that in reality produce, as results, what we incorrectly understand as drug action.

Following out the idea of energy phenomena, facts innumerable support the idea and through such we will be able to relate the various properties of drugs. Taking the following, we can readily understand the phenomena of their behavior, in which an

Astringent is any substance or force of weak electrolytic power.
Calefacient, one of increased electrolytic power.
Rubefacient, one still greater.
Vesicant, still more, and
Escharotic of such power as to wholly overcome the power of the system's force or current.

In comparison with the force of heat or electricity with substance or matter we can establish a true relation and that we are no longer dealing with different agents, but that we are dealing with the energies which in degree produce the like results that we reasonably anticipate they should.

Thus we can invade the field of the *"phenomena of drug action,"* and apply our ideas in elaboration in differentiating between stabilizers or normalizers, antiseptics and disinfectants and obtain the clear cut conception in results obtained.

A stabilizer or normalizer, whether as substance or as the force as heat or electricity or as radium itself, is one in which the equilibrium of energy forces are maintained; in other words, in which the reaction of their energies is maintained in a state of equal exchange: an antiseptic, in which the energy of the agent is greater than the energy of the surrounding influence and a disinfectant one, in which the energy is so great in power that it wholly overcomes the energy of invading organisms. We view this phenomenon when substances are employed, erroneously as the activity of substance, when in reality it is energy whose action is identical with heat, light or electricity.

That the energy of the body is the basic and fundamental starting point becomes evident. That the storehouse is the cells of the brain has been amply demonstrated. That government of control is through radiation in distribution by nerves, and through these every cell of the body is governed and controlled, that the food we eat, the water we drink and the air we breathe are the sources of supply. Nitrogen is the one element whose function is to transform the obtained energy into available energy as potential and the function of its regulation and distribution is effected by the nervous system. When interference occurs to the supply to any particular part, it is then that equilibrium is disturbed and abnormality and disease are the consequences and result. Following this it will become of primary importance to determine the normal amount in supply needed for the entire system and also for each particular part and by means of such

determinations the coming physician will be not alone able to obtain a clear and correct insight into cause and effect, but will be able to predicate the consequence and result of such interferences for he will then know what is the meaning of vital force. In order to accomplish all this he will through necessity be first, a trained physicist, then a mathematician and lastly an anatomist.

The use for drugs will be planted upon a firm basis if need be found for their use and what we determine as the possibility in action of drugs today we will be able to know as specific tomorrow.

Drugs per se do not act, it is their inherent energies contained within the atom and these energies through influences of release, react with the energies of the body, and whether substances as agents or force as heat, light or electricity be employed, the results that are manifest are nothing more and nothing less than phenomena of physical transformations of energies.

In conclusion of this, a preliminary of the subject, appreciation is extended for the aid given by H. T. Kelly, M. D., and St. C. R. Gay.

TO PREVENT TYPHOID.

Edwin O. Jordan, professor of hygiene and bacteriology at the University of Chicago, writing in the Journal of the American Medical Association, gives the following rules for the prevention of typhoid fever:

For the individual:

1. Keep away from all known or suspected cases of typhoid.
2. Wash hands thoroughly before meals. Do not use "roller towels."
3. Use drinking water only from sources known to be pure, or if this is not possible, use water that has been purified by municipal filtration or by hypochlorite treatment or by boiling in the household.
4. Avoid bathing in polluted water.
5. Use pasteurized or boiled, instead of raw, milk.
6. Select and clean with the greatest care vegetables and berries that are to be eaten raw.
7. Avoid eating "fat" raw oysters and, in general, oysters and other shellfish whose origin is not known.
8. Be vaccinated against typhoid in all cases in which any special exposure is known or feared.

For the community:

1. Insist on the hearty co-operation of all persons with an efficient health officer.
2. Require notification and a reasonable degree of isolation of every known or suspected typhoid case.
3. Exercise strict control over the disinfection of known typhoid excreta.
4. Insist on pure or purified water supplies.
5. Require pasteurization of milk supplies.
6. Regard all human excreta as possibly dangerous and control their disposition in such a way as to prevent contamination of food or drink.

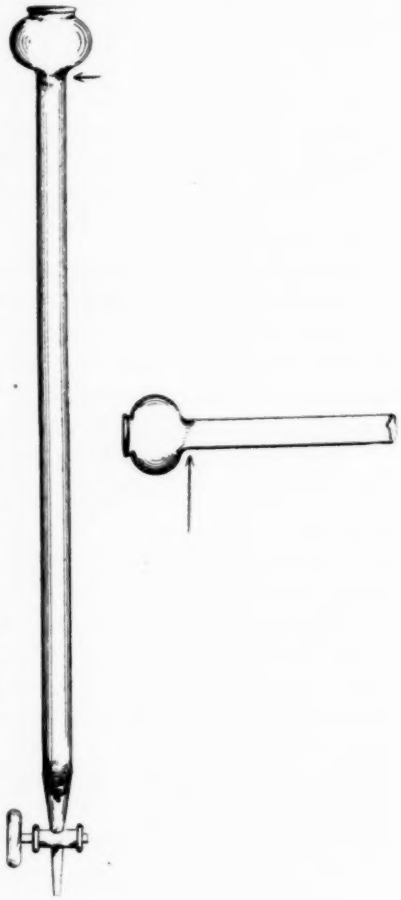
BURETTE—IMPROVED FORM.

JOHN W. FORBING, PH. C., B. S. IN CH.

The accompanying drawing gives the improved form of burette in the vertical position and a section of top in the horizontal.

In volumetric work it frequently happens, even when a large number of burettes is at the disposal of the operator, that solutions must be discharged and new solutions of different character introduced. Ordinarily, to accomplish this, the instrument is emptied of the solution previously contained, washed with distilled water, and, to avoid dilution, a small portion of the volumetric solution to be used is poured in, and the water adhering to the sides washed out several times.

There are, chiefly, two ways in which this is done; the first by closing the top with the thumb and agitating a small portion of the V. S. to be used, emptying and repeating the operation several times; the second without closing the top, bringing the burette to a horizontal position, rotating and balancing the liquid in a manner that it does not escape. The former method is not scientific, nor is it a strictly cleanly way of handling solutions. The latter is clumsy, and, even with the most adept, unsatisfactory.



In placing a bulb similar to that of a thistle-tube on top of the burette, the latter method is easily handled by those even who seldom have occasion to use burettes. When the improved burette, as shown in drawing, is placed in the vertical position, it can be rotated with assurance that the bulb will catch the over-flow, prevent spilling and the running down of the liquid on the outside of the burette. By making the aperture of the bulb somewhat larger than that of the lumen of the burette proper, filling is made easy also, and the necessity for use of a funnel is obviated.

CREIGHTON UNIVERSITY LABORATORIES, Omaha.

A NEW METHOD FOR THE QUANTITATIVE SEPARATION OF STRYCHNINE AND QUININE.

G. N. WATSON, UNIVERSITY OF KANSAS.

The chloroplatinate of strychnine is nearly insoluble in water, insoluble in alcohol and practically insoluble in a mixture of alcohol, 90% and dilute hydrochloric acid, 10%. The chloroplatinate of quinine is soluble in water, soluble in alcohol and very readily soluble in the alcohol-hydrochloric acid mixture.

From the above data, the following method has been worked out for the separation of strychnine and quinine that seems to excel in point of accuracy and simplicity any method heretofore published,—the method being especially valuable for the separation of small quantities of strychnine from large quantities of quinine, a condition generally found when these two drugs are prescribed together.

Dissolve .050 to .100 grammes of the mixed alkaloids (depending on amount of strychnine present) in a small amount of the alcohol-hydrochloric acid mixture (about 5 cc.), add 20% solution of platinic chloride, drop by drop, while slightly agitating the mixture, until the precipitation is complete. Add 5 cc. more of the solvent, cover with watch glass and set aside for one hour, then filter through tared filter, wash with alcohol, place in oven, dry at 100° C. for fifteen minutes, cool and weigh. If the proportion of quinine is large, it will be necessary to add 5-15 cc. more of the solvent before filtering. It will also be necessary to decompose the precipitate with alkali, NaOH, recover the strychnine with chloroform, evaporate and reprecipitate the chloroformic residue from a few cc. of the alcohol-hydrochloric acid solvent, with the platinic chloride reagent.

The chloroplatinate of strychnine is yellow in color, crystalline, and has a remarkable lustre. It contains about 62% of the alkaloid and 18% of metallic platinum.

The chloroplatinate of quinine has an orange color and an amorphous appearance.

A trace of chloroplatinate of quinine gives an amorphous appearance to the chloroplatinate of strychnine, a valuable indication of the purity of the strychnine salt.

The amount of strychnine can be calculated from the weight of the chloroplatinate, from the amount of metallic platinum, or directly by the decomposition of the chloroplatinate.

By this method it has been found possible to determine the strychnine in a mixture of .060 of quinine and .002 of strychnine, being about the proportions found in such preparations as Elixir of Iron, Quinine and Strychnine.

In determining the strychnine in the Elixir of Iron, Quinine and Strychnine, it would be necessary to liberate the total alkaloids and proceed with the mixed alkaloids as directed. The quinine can be determined by difference or from the filtrate by making alkaline, shaking out with ether or chloroform and weighing the dried residue.

Gold chloride produces with strychnine a salt having a solubility and other properties very similar, if not identical, with that of the platinic chloride.

ON THE NATURE OF THE SUGARS FOUND IN THE TUBERS OF SWEET POTATOES.*

K. MIYAKE.
(From the Chemical Laboratory, College of Agriculture, Tohoku Imperial University, Sapporo, Japan.)

(Received for publication, April 19, 1915.)

This is a second paper on the results of investigations, now being conducted in our laboratory, concerning the sugars in the underground reserve organs of plants.[1]

Stone[2] studied the carbohydrate constituents of the sweet potato and proved the presence of saccharose among the sugars. Other previous investigations have been concerned only with the general composition. Consequently we selected the sweet potato as the object of our second study on this subject, and investigated the nature of the sugars.

PREPARATION OF THE SYRUP.

One hundred gm. of the finely pulverized material were extracted in a Soxhlet apparatus with ether. After evaporating the ether, the oil-free residue was placed in a 750 cc. Erlenmeyer flask, and extracted daily with 300 cc. of 95 percent alcohol by heating in a boiling water bath, with a reflux condenser. About two weeks were required to remove the last traces of sugars. The combined extracts were filtered to remove the sediment which was formed on standing, and the filtrate was evaporated to a syrupy condition in a partial vacuum. The syrup was purified by shaking with absolute alcohol. The clear solution was decanted and evaporated down to about 10 cc.

The above method of preparing the syrup was once more repeated to get a sufficient quantity of the material for the investigation.

QUALITATIVE TESTS OF THE SYRUP.

The syrup gave the following qualitative reactions:

1. It had a very sweet taste.
2. It reduced Fehling's solution strongly; after inversion with hydrochloric acid the reducing power is much enhanced, showing the presence of both reducing and non-reducing sugars.
3. It gave Molisch-Udransky reaction with a-naphthol and sulphuric acid.
4. It gave the characteristic blood-red color on heating with picric acid and caustic soda (reaction of Braun for glucose).
5. It gave the characteristic fiery red color of ketose with resorcin and hydrochloric acid (Selivanoff's reaction).
6. It gave Pinoff's reaction with ammonium molybdate and acetic acid.
7. It did not show any pentose reaction by the phloroglucin method.
8. No mucic acid was produced upon oxidation with nitric acid.

* Journal Biological Chemistry, June, 1915, 503.

[1] The first paper entitled On the Nature of the Sugars Found in the Tubers of Arrowhead, is published in the Journ. Biological Chemistry, xv, p. 221, 1913.

[2] W. E. Stone: Ber. d. deutsch. chem. Gesellsch, xxiii, p. 1406, 1890.

9. Saccharic acid was detected as acid potassium salt in the oxidized solution of the syrup.

10. It rotated the plane of polarization toward the right; after inversion it was slightly levorotatory.

11. It produced no characteristic mannose phenylhydrazone with phenylhydrazine, either in the original or in the inverted syrup. When the mixture in both cases was warmed in a boiling water bath with acetic acid, the yellowish, well crystallized osazone was produced.

12. Two drop portions of the syrup were placed on object glasses, and inoculated respectively with crystals of glucose, fructose, maltose and sucrose. After twenty-four hours the solution which had been inoculated with sucrose showed the formation of new crystals, while the others remained unchanged.

From the above tests it is evident that the syrup contains both reducing and non-reducing sugars. Moreover, it is safe to conclude that the presence of pentose and mannose molecules is excluded, since no characteristic reactions could be found, as above mentioned.

ISOLATION OF SUCROSE.

When the syrup was left untouched for about twenty-four hours, fine crystals were abundantly formed in it. A small amount of 95 percent alcohol was then added to the syrup, the mixture was filtered and the precipitate washed with absolute alcohol and ether. The sugar thus obtained was recrystallized from alcohol. After drying in a vacuum over sulphuric acid the purified sugar was about 2 gm. in weight.

0.6439 gm. of the sugar was dissolved in water, made up to 25 cc. and polarized in a 200 mm. tube, in a Schmidt and Haensch half-shadow polariscope. A dextrorotation of 9.9 on the scale was observed. The specific rotary power is

$$(a)d = \frac{9.9 \times 0.346 \times 25}{0.6439 \times 2} = 66.5 \text{ (at } 20^\circ)$$

The specific rotary power indicates that the sugar under examination is sucrose.

PHENYLOSAZONE TESTS.

The mother liquor filtered from the sucrose crystals was concentrated again into a syrup, but it did not show any sign of forming new crystals, even after one week's standing. An attempt was then made to separate and detect the sugars as phenylosazones.

1 gm. of the syrup, 2 gm. of phenylhydrazine hydrochloride, 3 gm. of sodium acetate, and 20 cc. of water were mixed and heated in a boiling water bath. After fifteen minutes yellowish crystals had been produced. At the end of one hour and a half the heat was removed and the crystals were examined under the microscope. None of the other forms, besides the stellate form of yellow needle-shaped crystals which coincides with that of phenylglucosazone was observed. When cooled it was filtered and washed with a little water. Upon recrystallization from 60 percent alcohol and drying over sulphuric acid in a vacuum, the amount was 0.85 gm. The melting point was determined and found to be 204°, which coincides with that of phenylglucosazone. Consequently, the osazone under examination is phenylglucosazone.

1 gm. of the syrup was dissolved in 20 cc. of water and inverted with hydrochloric acid in a boiling water bath for about thirty minutes. After it was neutralized with sodium carbonate, 2 gm. of phenylhydrazine hydrochloride and 3 gm. of sodium acetate were added and the mixture was heated in a boiling water bath, exactly in the same manner as above described. After heating for one hour and a half, the crystals were examined under the microscope, but they were all uniform and quite identical with those of phenylglucosazone which was obtained in the previous experiment. When cooled, it was filtered and washed with a little water. The yellow crystals thus obtained were recrystallized from dilute alcohol and dried over sulphuric acid in a vacuum. The product weighed 1.06 gm., and the melting point was found to be 204°. The crystalline form and melting point indicate that the osazone obtained was phenylglucosazone without admixture of other osazones.

The osazone test which was made to separate and detect the sugars in the syrup thus did not yield results differing from those obtained by the qualitative tests, as already described. But, as a result of this experiment, the presence of maltose is excluded, since maltose, if present, would have formed an osazone of a melting point very similar to that of glucosazone, but easily distinguishable from the latter by its crystalline form.

SUMMARY.

1. Sugar of the sweet potato tubers is made up of both reducing and non-reducing sugar.

2. The reducing sugar consists of both glucose and fructose, while the non-reducing sugar is sucrose.

3. The presence of pentose, galactose, and mannose molecules is excluded. The presence of maltose is also excluded.

IPECACUANHA: BOTANICAL SOURCE—MEDICINAL VALUE.

MRS. HAMPTON RAY KENASTON.*

IPECACUANHA.—Portuguese form of the native Brazilian word, ipe-kaa-guene, which is said to mean "road-side sick-making plant," or a creeping plant that causes vomiting. The plants are perennial herbs 10 to 20 cm. high, with creeping, woody hypogeous stems. It is somewhat shrubby with leaves eliptical, entire, short-petiolate, and with divided stipules. The flowers are white and form a bunch of small flowers upon a long-stalked, terminal head. The fruit is a soft, dark, purplish-blue berry, with characteristic spiral arrangement of the carpels.

The part of ipecacuanha used in medicine is the root obtained from *Psychotria*, or *Uragoga (Cephælis) Ipecacuanha*, a small shrubby plant of the natural order Rubiaceæ. It is a native of Brazil, growing in clumps or patches in moist shady

* Chairman Committee on Botany and New Medicinal Plants, South Dakota State Pharmaceutical Association.

forests of Brazil and Colombia and is also found in localities adjoining those mentioned, and thrives best in clay soil along the banks of rivers. While it requires a great deal of moisture, it cannot live under water, and consequently in Colombia it is found in its best development in regions where the rainfall is abundant, but where the rivers do not overflow. The root appears to be possessed of very great vitality, for in 1869 botanist M'Nab, of the Botanical Gardens of Edinburg, Scotland, discovered that so small a portion as 1/16 of an inch of the annulated root, placed in suitable soil, would throw out a leaf-bud and develop into a fresh plant, while Lindsay, a gardener in the same establishment, proved that even the leaf-stalk is capable of producing roots and buds; hence there is but little probability of the plant being destroyed in its native habitat. In gathering ipecac, the whole plant is uprooted and the thin and soft rootlets are thrown away and these discarded rootlets serve for reproduction, becoming in a year well-developed plants with valuable roots of their own.

The drug of commerce is procured chiefly from the region lying between the towns of Cuyaba, Villa Bella, Villa Maria and Diamantina in the province of Matto Grosso, and near the German colony north of Rio Janerio. The Sinu River is the ideal region for ipecac. The plant is found in abundance from near the headwaters of this river to near the city of Monteria, about 60 miles from the coast, where the clay formation which ipecac seems to demand stops, and below which point the river is subject to periodical overflows. The growth extends to several miles on each side of the river and also to the more important tributaries of the Sinu, the Esmeraldas, Verde and Manso Rivers. In regions where the water is excessive, such as the valley of the Atrato, the plant, though found, has a poor growth and is of an inferior quality.

The area from which Cartagena ipecac is derived is very extensive and somewhat scattered, though preëminently important is the region of the Sinu River and its tributaries. It is estimated, on good authority, that the land actually covered by the plant must embrace several hundred square miles, though any attempt at an accurate estimate would be useless. A relatively small amount of Cartagena ipecac comes from the Atrato valley, and it is of inferior quality. In addition to the two regions mentioned, there is another, nearer than either of them to Cartagena, called San Onofre. It is traversed by many small streams, none of them navigable. The soil, in addition to the clay so necessary for the successful production of ipecac, contains a considerable amount of sand and humus, formed by the decay of great masses of vegetable matter. The region appears to be of a character that is well adapted to the growth of both rubber and ipecac, which fact is worthy of note for the reason that, in many cases, the same people who gather ipecac collect the rubber milk and by combining the two industries, economy of collecting each is effected. While the ipecac found here in a given area is less than found on the Sinu or Atrato, the quality almost equals that of the Sinu and is far superior to that of the Atrato. A small amount of ipecac is derived from the tributaries of the Magdalena.

It is probable that other localities, especially the areas covered by the rivers and their tributaries flowing from the interior of Colombia into the Amazon and Orinoco are adapted to the production of ipecac and do produce it, but owing to the complete commercial isolation of these sections, their resources are not of-

fered to commerce or even definitely known. It is not thought that there are any new areas likely to be opened up to commerce in the near future.

The plant is not an object of cultivation in South America, though there is no reason why it should not be, except the fact that it is found wild in such abundance and is gathered from the forests chiefly by the Indians.

Ipecacuanha, although in common use in Brazil, was not employed by the medical profession of Europe previous to 1672. In France, within a few years after that date, it was employed as the chief ingredient in a remedy for dysentery, the secret of the composition of which was purchased by the French Government for 1000 louis d'or, and made public in 1688. The botanical source of ipecac was not accurately known until 1800. The great value of the drug in dysentery, and its rapid increase in price from an average of 2s 9½d per pound in 1850 to about 8s 9d per pound in 1870, led to attempts to acclimatize the plant in India, which, however, have not proven to be a commercial success, owing to the slow growth of the plant and the prices not being maintained at a figure that invited cutivation of the plant for commercial reasons, together with the difficulty of finding suitable spots for its cultivation.

Like other dimorphic plants, ipecacuanha ripens seeds best when cross-fertilized, and in consequence of the botanical culture, presents various forms. The diversity of form is most apparent in the young plants, and tends to disappear with age. *Triosteum Perfoliatum* is a plant belonging to the *Caprifoliaceæ* or *Honeysuckle Family*, which is used as a medicine and the rhizome of commerce is known as *Wild Ipecac*. It is a perennial herb with connate-perfoliate leaves and small, orange-red, globular drupes, growing in Canada and the United States as far west as Kansas. Its rhizome is yellowish-brown, somewhat branched, cylindrical, 10 to 20 cm. long, 10 to 15 mm. in diameter, with numerous cup-shaped stem-scars, and coarse, spreading roots; it is rather hard and tough and has a bitter, nauseous taste. *Triosteum* contains an emetic alkaloid, *triostine*, and considerable starch. The seeds of *triosteum perfoliatum* are sometimes roasted and employed like coffee, the plant being known as wild coffee.

The part of ipecacuanha used in medicine is the root, which is simple or divided into a few branches, flexuous and occurs in pieces about as thick as a goose quill, of a grayish-brown or reddish-brown tint externally, having a ringed or annulated surface and exhibiting a white or grayish interior and a hard wiry center. It has a faint rather musty odor, and a bitterish taste. The different kinds known in commerce, (gray, red, brown), are all produced by the same plant, the differences arising from the age of the plant, the mode of drying, etc. It is usually mixed with more or less of the slender subterranean stem, which has a very thin bark, and is thus very easily distinguished from the root.

The root is collected at all seasons, although chiefly from January to March, and is prepared for the market by mere drying. The activity of the drug resides chiefly in the cortical portion, and hence the presence of the stem diminishes its value. The variety imported from Colombia and known as Cartagena ipecacuanha, differs only in its larger size and in being less conspicuously annulated.

Ipecacuanha owes its properties to the presence of rather more than 1% of the alkaloid emetine, which, with the exception of traces, occurs only in the cortical portion of the root. It is a white, amorphous substance, has a bitter taste and

no odor, turning yellow when exposed to air and light, almost an insipid powder, moderately soluble in alcohol, and having all the characteristics of the vegetable alkaloids. There are also present a volatile oil, starch, gum and a glucoside, which is a modification of tannin and is known as ipecacuanhic acid.

In acute intestinal affections Ipecac has achieved its greatest reputation as a remedy, one of its oldest titles being *radix antidysenterica.* Its power over acute dysentery was known to Piso and Helvetius in the 17th century, and was mentioned by Balmain, (1797), Playfair, (1813), Twining, (1831), and Delioux, (1851). The reports upon its effect in acute tropical dysentery by Docker, (1858), attracted general attention, and since the latter date it has been universally recognized as a specific remedy for acute tropical dysentery and that of malarious districts.

The central emetics—those which produce their effect by acting on the vomiting center in the medulla; gastric emetics—those which act directly on the stomach itself.

Ipecacuanha is classed both as a central and as a gastric emetic; when taken by the mouth it acts as a gastric emetic before absorption into the sytem, and later produces a further and more vigorous effect by stimulation of the medullary centre. It must be remembered, however, that, valuable though these drugs are, their action is accomplished by so much depression, they should never be administered except under medical advice.

Emetine acts as a violent emetic in doses of 1/16 of a grain or even less, and is a powerful poison. The dose of the powdered root is ¼ to 2 grains when it is desired that an expectorant action result, and 15 to 30 grains when it is given as an emetic, which is one of its most valuable functions. The Pharmacopœias contain a number of preparations of ipecacaunha, most of which are standardized. A preparation from which the emetine has been removed and known as "de-emetized ipecacuanha," is now upon the market and used in some conditions.

When applied to the skin, ipecacuanha powder acts as a powerful irritant, even to the extent of causing pustulation. When inhaled it causes violent sneezing and a mild inflammation of the nasal mucous membrane, resembling a common cold in the head. Small doses of the drug act as a stimulant to the secretions of the mouth, stomach, intestines and liver, and it therefore increases the appetite and aids digestion; it is very frequently employed as an expectorant in cases in which the bronchial secretions are deficient.

Ipecac is imported into the United States free of duty and the annual importations are about 36,500 pounds, the larger portion of which was purchased from Colombia.

THE PHARMACY OF OXYPINENE.

HENRY C. BLAIR.

Oxypinene or Pinene Ozonide is so little known to pharmacists, that it may be well first to consider what is known about its composition chemically, and its use therapeutically, before taking up briefly the pharmacy of this most interesting substance.

In the May, 1915, issue of the American Journal of Pharmacy appears an article on Oxy-Pinenes by J. Emile Blomén, A. M., Ph. D.

He says: "Nowhere in nature can be found a more marvelous 'dead' organic substance than this one (Terebinthina) which, like a living being, inhales oxygen from the air and, transforming it, gives it off in another form."

We know that the pinene is the substance that "inhales" oxygen forming oxides which are given off as oxygen. If in place of oxygen, ozone is placed in contact with pinene, under certain conditions it will be "inhaled" and ozonides will be formed which will give off oxygen in a nascent form.

"When ozonides of pinene come in contact with moisture, they are decomposed, forming hydrogen peroxide and oxygen compounds or pinene. On prolonged standing or by heat, intermolecular or auto-oxidation will take place, resulting in the higher oxidation products of pinene, pinonic acid, etc."

Oxypinene or ozonide of pinene $C_{10}H_{16}O_3$ is a heavy viscid liquid of a light yellow or lemon color, having an agreeable turpentine odor and taste. It is soluble in some fixed oils, most volatile oils, chloroform, ether, alcohol, etc. Dr. Blomén promises to give a history of the uses of the oxypinenes and we hope he will include more of the chemistry also.

Oxypinene is prepared by exposing the vapor of pinene to a current of ozonized air, prepared by the action upon dry air of a high tension electrical discharge. An addition occurs between the pinene and oxygen resulting in the production of a dense white vapor (Oxypinene)."

This description is taken from the very able article by Dr. Bertram H. Waters, M. A., M. D., published in the Medical Record, February 13th, 1915. He says further, that in making oxypinene, only pure pinene and ozonized air should be used.

From clinical observation, Dr. Waters concludes that, "Oxypinene is useful in subacute and chronic affections of the respiratory system and is indicated as a mild stimulant to the mucous membranes and other tissues. When brought in contact with infected surfaces, it inhibits the growth of certain pathogenic microorganisms, and, by its pathogenic property, increases the circulation in the infected area, thus promoting the destruction of such organisms by phagocytosis."

It is reasonably certain that the treatment of wounds with old turpentine, found by surgeons during the Civil War so useful against gangrene, owed its efficacy to oxypinene in a crude state.

We have been informed that this same old-fashioned treatment is now in use in the German army.

* Read at meeting of Pennsylvania Pharmaceutical Association, 1915.

Ozonide of pinene, or Oxypinene as Dr. Waters calls it, is probably the most concentrated form of the valuable parts of "old turpentine" and therefore, should be particularly valuable in treating wounds, ulcers, etc.

In making pharmaceutical preparations of oxypinene, it must be remembered that decomposition with formation of hydrogen peroxide and pinene compounds takes place when water is used, and unless this is desirable, water is to be avoided.

Also all oxygen compounds loosely combined are more or less dangerous to handle unless care be used. High temperatures are to be avoided or exposure to air for any length of time. For instance, in making an ointment of oxypinene, such bases as ointment of rose water, hydrous wool-fat, etc., are to be avoided on account of the water they contain. Also the ingredients should not be melted together or if they are, the oxypinene should not be added until they are cold as any excess of heat will cause "the intermolecular or auto-oxidation" mentioned by Dr. Blomén in his paper above referred to.

In making suppositories, the heat required to melt a cacao butter base is so little that it need not be considered; but, as oxypinene does not combine well with cacao butter and as there are so many qualities of cacao butter on the market, and as there is another substance superior in every way and inferior in no respect, we need not hesitate to mention Stearate from Cocoanut Oil as being the best vehicle.

About one percent of oxypinene in rectal and vaginal suppositories has given excellent results clinically.

For use in treating eczema, skin affections, hemorrhoids, etc., a very efficient compound ointment has been in use for some time in an experimental way clinically. It is made by using a base composed of cocoanut oil and petroleum, talcum, starch, and zinc oxide, resorcinol and oxypinene.

Considerable experimental work has been done in an endeavor to produce a powder for dusting wounds and for internal administration in enteric pill or capsule form. It is believed that diatomaceous earth produces the best results.

A powder made by incorporating one part of oxypinene with two parts of kieselguhr is satisfactory. Such powder should be kept in sealed containers, for not only is oxypinene in this form liable to undergo auto-oxidation, but the kieselguhr seems to have a catalytic action, as the powder gains considerable in weight when exposed to air for a comparatively short time. One would suppose this extra weight to be water from moisture in the air, but careful chemical examinations has proven it to be oxygen. It is therefore a fact that through the catalytic action of kieselguhr, this powder absorbs oxygen from the air, which makes it a more valuable dressing for wounds than it would otherwise be.

Dr. Waters has found Oxypinene Vapor to be a useful form with which to treat disease. It is not a gas but a vapor and is made up of such finely divided particles, that it floats about in the air, resembling smoke. It is produced by bringing pinene ($C_{10}H_{16}$) vapor and ozonized air into intimate contact in a mixing chamber.

Pinene Vapor is produced by allowing a current of dry air to pass over the surface of volatile pinene. The ozone is made by silent electrical discharges in purified air. In order to avoid the production of nitrates and gaseous peroxides, the air which is used in generating oxypinene must first be freed from moisture; this also allows a higher degree of saturation with the volatile pinene.

Oxypinene Vapor may be inhaled mixed with the air of a room or directly from the generator by means of a suitable mask. For the treatment of superficial lesions on the surface of the body, it is used by allowing it to flow directly upon the affected surface.

When inhaled oxypinene acts as a stimulating expectorant. When applied to the skin it acts as an antiseptic stimulant.

SUMMARIZING.

Oxypinene is an ozonide of pinene, a chemical compound consisting of one or two molecules of ozone (O_3) linked to one molecule of pinene ($C_{10}H_{16}$) the active and chief constituent of oil of turpentine.

It is produced in two forms, a vapor and a pale yellow liquid of honey-like consistency.

On contact with moisture it breaks down into hydrogen peroxide, oxides, aldehydes, and ketones or pinene.

Exposed to high temperature auto-oxidation takes place.

It is useful in treatment of tubercular affections, wounds, ulcers, diseases of the mucous membranes, eczemas, hemorrhoids, etc.

It is an expectorant, stimulant and oxidizing agent.

Mixed with diatomaceous earth, one part to two parts, it makes a suitable powder for dressing ulcers, old wounds, etc.

Made into suppositories with stearate from cocoanut oil, about one percent strength, it is very useful in treating diseases of the membranes when a stimulating, mild antiseptic is required.

In a compound ointment combining astringent and drying properties with its antiseptic and stimulating effect, it is useful in eczemas and in certain cases of hemorrhoids.

The vapor may be inhaled from a generator or indirectly mixed with air.

The liquid may be applied to wounds in its strongest form.

THE QUALITY OF COMMERCIAL SUGAR OF MILK.*

J. W. ENGLAND.

Practically, all the sugar of milk sold in this country is of home manufacture and it compares most favorably with that imported from abroad. Our past experience indicates that the following specifications, in buying sugar of milk, will ensure a product of good quality:

"Sugar of Milk of acceptable quality must be a fine, white, dry, odorless powder of not less than 99.7 percent strength by polariscope containing not more than 0.020 percent of total nitrogen; not more than 0.020 percent fat and yielding not more than 0.050 percent ash. It must comply with the U. S. P. heavy metals test and be neutral to litmus paper. A ten percent aqueous solution must be clear, odorless, colorless and free from mechanical impurities."

* Read at meeting of Pennsylvania Pharmaceutical Association, June, 1915.

Recent analyses of seventeen lots of 150 barrels of 200 pounds each, representing about 500,000 pounds, gave the following data:

No.	Ash	Nitrogen	Fat	
1	0.042	0.018	0.0084	(American)
2	0.024	0.013	0.0096	"
3	0.02	0.01	0.025	"
4	0.0209	0.0061	0.017	"
5	0.006	0.0064	0.0213	"
6	0.066	.....	0.0026	(Foreign)
7	0.011	0.0055	0.014	(American)
8	0.010	0.0058	0.008	"
9	0.014	0.006	0.0052	"
10	0.01	0.006	0.0064	"
11	0.01	0.0083	0.0016	"
12	0.01	0.0083	0.002	"
13	0.01	0.0037	0.0168	"
14	0.022	0.03	0.0155	(Foreign)
X	0.23	0.0102	0.0722	Poor appearance, rejected
15	0.020	0.017	.....	
16	0.04	0.0065	0.0045	(Foreign)
17	0.02	0.0069	0.0059	(American)

The percentage of absolute sugar of milk, as determined by the polariscope, was not less than 99.73 percent in any of the samples.

The most striking result of the analyses is the low content of ash. The U. S. P. (IX) standard for ash has been fixed at 0.25 percent; the largest percentages found was 0.066 and 0.04, foreign brands.

ANALYTICAL LABORATORY OF SMITH, KLINE AND FRENCH CO.

INVERSION OF CANE SUGAR IN SYRUPUS.*

JOSEPH L. MAYER.

In the February, 1902, issue of the Druggists' Circular (page 27), in an article, "Fallacious Tests for Glucose in Cane Sugar Syrup," I showed that Syrupus made according to the official formula by the hot process did not contain more than a very faint trace of reducing Sugar, but after being stored for five months in a corked bottle which had been placed in a cool, dark place, yielded a very heavy precipitate of Cuprous Oxide when tested with Fehling's Solution, indicating that much of the Cane Sugar had been inverted.

The tests made at that time being qualitative only the thought occurred to me recently to make a series of quantitative tests to determine exactly how much of the Cane Sugar was converted into Reducing Sugar, and the following work was therefore undertaken.

On January 28th, 1915, 1000 cc. of syrupus were made following the directions on page 435 of the U. S. P., VIII, for the cold percolation process and the same day 1000 cc. of syrupus were made by the method on page 435 of the U. S. P., VIII, for the hot process, each sample being placed in a sterilized glass stoppered bottle.

The syrup made by percolation had a specific gravity of 1.3148 at 25 deg. C.,

* Read before the New York State Pharmaceutical Association, June 29, 1915.

and the sample made by the hot process had a specific gravity of 1.3126 at 25 deg. C.

A quantity of syrup from each bottle was immediately weighed in tared 100 cc. graduated flasks and water added to make 100 cc. and the reducing sugar in 50 cc. of this solution determined by the following method of Walker and Munson:

(1) *Preparation of Solutions and Asbestos.*

(a) *Solutions.*—Use solutions (a), and (b), and (c) as given on page 42, under Soxhlet's modification of Fehling's solution.

(b) Asbestos.—Prepare the asbestos, which should be the amphibole variety, by first digesting with 1:3 hydrochloric acid for two or three days. Wash free from acid and digest for a similar period with soda solution, after which treat for a few hours with hot alkaline copper tartrate solution of the strength employed in sugar determination. Then wash the asbestos free from alkali, finally digest with nitric acid for several hours, and after washing free from acid shake with water for use. In preparing the gooch crucible load with a film of asbestos one-fourth inch thick, wash this thoroughly with water to remove fine particles of asbestos; finally wash with alcohol and ether, dry for thirty minutes at 100 deg. C., cool in a desiccator and weigh. It is best to dissolve the cuprous oxide with nitric acid each time after weighing and use the same felts over and over again, as they improve with use.

(2) *Determination.*

Transfer 25 cc. of each of the copper and alkaline tartrate solutions to a 400 cc. Jena or non-sol beaker and add 50 cc. of reducing sugar solution, or if a smaller volume of sugar solution be used, add water to make the final volume 100 cc. Heat the beaker upon an asbestos gauze over a Bunsen burner, so regulate the flame that boiling begins in four minutes, and continue the boiling for exactly two minutes. Keep the beaker covered with a watch-glass throughout the entire time of heating. Without diluting, filter the cuprous oxide at once on an asbetos felt in a porcelain gooch crucible, using suction. Wash the cuprous oxide thoroughly with water at a temperature of about 60 deg. C. then with 10 cc. of alcohol and finally with 10 cc. of ether. Dry for thirty minutes in a water oven at 100 deg. C., cool in a desiccator and weigh as cuprous oxide.

N. B.—The number of milligrams of copper reduced by a given amount of reducing sugar differs when sucrose is present and when it is absent. In the tables following the absence of sucrose is assumed except in the two columns under invert sugar, where one for mixtures of invert sugar and sucrose (0.4 gram of total sugar in 50 cc. of solution) and one for invert sugar and sucrose when the 50 cc. of solution contains 2 grams of total sugar are given, in addition to the column for invert sugar alone. (U. S. Dept. of Agr., Bur. of Chem., Bull. 107, rev., page 241 and 242.)

The cold percolation process sample contained .174% invert sugar.

The hot process sample contained .138% invert sugar.

The cane sugar from which the syrups were made was tested by the same method and contained .111% invert sugar, thus indicating that in the process of making the samples very little inversion had taken place.

The syrups were then placed in a cool dark place, samples being taken from them at frequent intervals and tested with the following results:

		Cold	Hot	Invert Sugar
January	28, 1915 (The day the samples were prepared)	.174%	.138%	"
February	10, 1915	.172%	.171%	"
"	25, 1915	.292%	.170%	"
March	9, 1915	.559%	.401%	"
"	23, 1915	1.123%	1.061%	"
April	2, 1915	1.807%	1.595%	"
"	9, 1915	2.029%	1.905%	"
"	15, 1915	2.367%	2.354%	"
May	6, 1915	3.411%	3.566%	"
"	19, 1915	4.978%	4.735%	"
June	3, 1915	6.586%	5.751%	"

These remarkable results not only disprove the statement very frequently made that in making syrups by the hot process much of the sugar is inverted, a statement which my original article above referred to disproved, but they also conclusively show that in making the samples by either the cold or hot process practically no inversion takes place. They show that upon standing the sugar in both samples becomes inverted, the inversion being greater in the cold process syrup than in that where heat is employed in the manufacture.

I am still at work on the samples and hope in my next paper on the subject to report further results of the investigation.

RESEARCH AND ANALYTICAL DEPARTMENT, RIKER LABORATORIES.

SOME EXPERIENCES WITH THE SALOL-COATING OF PILLS.*

J. C. AND B. L. DE G. PEACOCK.

The coating of pills with salol in order to render them insoluble in the stomach for the purpose of carrying the medicine into the intestines has been practiced for years past. Methods have been frequently described and one is set forth in the current edition of the National Formulary.

During the past two years salol-coated pills have been frequently called for, and the knack of salol-coating had to be developed by our prescription department. What is about to be said is by no means a discovery, but merely a recitation of experiences in the actual practice of the process, a few simple facts which may help those who are called upon to do this work for the first time.

Two methods of salol-coating have been suggested; first, that of dipping the pills into the melted salol by means of pins and rotating in the air until the salol has solidified, removing the pin when a sufficient coat has been taken on and closing the puncture with a drop of melted salol.

Second, the method in which the pills are placed in a vessel in which salol has been melted, and the vessel rotated until the salol congeals.

The second method is the plan given in the National Formulary.

The first method does not appear to have been as generally used as the second. It is very much more tedious to stick pins into the pills, dip them into the salol

* Read at the meeting of Pennsylvania Pharmaceutical Association, June, 1915.

and rotate a number of pills at one time, than to place the pills all at once, into a vessel, and rotate.

Besides, the salol sometimes chips off when the pin is withdrawn and the sealing produces an unevenness of coat which is not pleasing to the eye.

The second method is therefore much less tedious, and more rapid; and with a little practice gives excellent results both in the amount of salol applied and in the appearance of finished pill.

The pills which were most frequently ordered to be salol-coated, contained silver nitrate, sometimes with extract of hyoscyamus, and sometimes with opium.

The mass should be hard in order to get the best result. It is also desirable to have pills as nearly round as possible. The usual dusting powders can be applied, and while it is best not to leave more of this adhering than is necessary, the slight amount which may be needed in some cases is not objectionable. The size of the pill does not matter, although as in almost all pill work, a pill of one grain weight is easier to manipulate than a smaller one. In the experiments made, mass was added to the very small pills; powdered licorice root, kaolin, talc and confection of rose were used with good results.

The National Formulary (III) page 122, Section 2, enteric pill-coating, paragraph b, Salol-Coating, reads as follows:

"The pills, carefully freed from dusting powder are dropped into a capsule containing enough salol (approximately 0.06 gm., (1 grain) to every 0.8 gm., (3 grains), pill), previously melted by the heat of a water bath and allowed to cool so that by passing the hand along the bottom of the dish there is scarcely any warmth felt, and the capsule is then rotated until the pills are coated and the salol has congealed. The process is repeated twice, each time reducing the salol about one-half. Finally a finishing coat is applied by using only sufficient salol to coat the dish when melted; the dish being now kept quite warm (almost hot), the pills rotated quite rapidly until they are quite shiny, then turned into a cool dish, and the rotation continued until the pills are cool."

This plan was followed to the letter in the first several attempts which were made. The results, however, were not satisfactory, mainly because an insufficient quantity of salol is ordered for the first three treatments. Further, the use of more heat in the fourth treatment is very likely, in fact almost certain, to melt off some of the salol; and again, transferring to a cool dish produces uneven or irregular coating due to a too sudden reduction of temperature.

It was therefore found better to take more salol with which to start the treatment, and also, as nearly as possible, to use the same temperature in all the treatments. After a number of experiments, the following plan was worked out and has been used with constant success by a number of operators.

One of the most important details from the standpoint of practice is the selection of the vessel in which to do the coating.

Concave capsules and similar shaped vessels are not well suited because the pills tend to roll out during the rotation of the vessel, or at least get to some extent out of contact with the melted salol.

Flat bottom vessels with flaring sides are better suited because the pills are not so likely to be thrown away from the salol during rotation. But there is still the chance of the pills flying over the flaring sides. The vessel which ap-

pears to be best suited is a flat-bottomed, white enamel pan, with perpendicular sides; a handle gives additional convenience to this vessel; a size convenient for coating 24 to 30 pills is about 4 inches in diameter by about 1¾ inches deep. The inner surface should be smooth. The material of this vessel seems well adapted to the gradual cooling of the salol, a feature which is essential to success.

The perpendicular sides of this vessel prevent the pills from flying out, and the flat bottom keeps the pills in constant contact with the salol.

For 24 pills of 1 grain each, twenty grains of salol were usually found to be sufficient for the first three applications, and for the fourth and final treatment about seven grains additional were required.

The vessel having been decided upon, the proportionate amount of salol is placed in it then warmed over a flame (a water bath is not needed), just sufficiently to melt the salol, and the liquefied salol flowed over the bottom and into the angle of the vessel. The temperature is now allowed to fall until the salol is nearly ready to solidify, at this point the pills are placed in the vessel which is immediately rotated to prevent the pills from sticking together either from capillarity through melted salol on neighboring pills, or from sudden reduction of temperature, congealing the salol on the pills.

A thump against a block or the hand will separate pills when rotation alone does not.

Rocking the vessel at an angle will also keep the pills separated and in motion well suited to proper coating. The pills must not be rotated too rapidly, even in the flat bottomed dish with perpendicular sides, as the contrifugal force may throw the pills against the wall of the dish and out of contact with the salol.

Resting the vessel upon the counter or the hand during rotation, and using just enough rotation to keep the pills separated, gives the best results. The vessel should be rotated or rocked until free from sensible heat. The pills are then turned into a box. The coat of salol taken on in the first treatment will not usually mask the color of a black pill.

For the second treatment the dish is again heated, just sufficiently to melt the salol remaining; when it has cooled to some extent, the salol still liquid, the pills are put back into it, and rotated as before until cold. The second treatment will show a decided change in appearance.

A third application of salol is made in the same manner. This treatment appreciably increases the shell of salol.

For the fourth coating it is necessary to supply more salol, usually about one-third of the original amount taken, it being added to whatever remains in the vessel. For the fourth and final coating the vessel does not need to be made any warmer than for the first three coatings, nor is it necessary to transfer the pills to another dish as suggested by the National Formulary.

The rough uneven appearance of the coating that may be met with in one's first efforts can be repaired by heating sufficiently to melt off all the salol, and then resorting to proper conditions. This rough appearance is usually due either to insufficient salol or to a sudden drop in the temperature of the melted salol. Should the partly coated pills be thrown into a vessel that is too hot, the salol will be melted at the point of contact and the pills show unevenness when salol

has been lost or even bare spots. To remedy this appearance, melt off all the salol and return to the conditions outlined.

As to the number of pills that can be coated in a vessel of given size from twenty to thirty can be conveniently done in the one described. Even fifty can be done in this vessel, but experience will be needed; for fifty or more pills a larger dish should be provided, or the lot divided for treatment.

To indicate the wide scope of possibilities in salol-coating, pills which had been massed with petrolatum have been coated.[1] Gelatin capsules are also ordered to be salol-coated. This can be done by the same method. Even hard capsules containing liquids such as creosote can be coated by first placing the capsule inside of a slightly larger one.[1] Soft elastic capsules may also be enveloped in salol as the sample shows.

A MEDLEY.*

GEORGE M. BERINGER, JR., P. D.

Few men have so many problems and difficulties presented to them in their daily work as does the pharmacist. Accidents happen, preparations go wrong, materials are spoiled or rendered unfit for further use, by what, to the casual observer would seem the sheer perversity of the things themselves. To him who yields without struggle to such conditions, life is but "an empty dream." To him who, by the application of some almost insignificant bit of knowledge, conquers them, there comes the wild joy of wresting from an apparent defeat, an assured victory.

An illustration is furnished by a happening of a few months ago. A barrel of potassium bicarbonate, of German manufacture, had been on hand for some time. It was lined with parchmentized paper. Through some defect in the manufacture of the paper or the action of the salt upon it, the paper began to disintegrate. The more one tried to separate the salt and the paper the more they mixed. A boy was put to work spreading it on a table and picking out the bits of paper. It looked all right, but the first pound sent out was returned in a hurry. The paper was still there.

With the facilities at hand, recrystallization was out of the question, but nearly 200 pounds of material could not be wasted, especially, in the face of a rising market. Then came the magic inspiration of the electric fan. A small fan was set awhirl at one end of a long, narrow table. The table was covered with clean, heavy paper, and, along the edges was placed a row of wooden boxes to prevent the potassium bicarbonate from rolling to the floor. The end was left open.

Through the swift current of air, passing along this narrow channel, the material was allowed to drop, a handful at a time. Away went the paper—big bits and little bits—in a merry whirl, while the heavy chemical—bright and clean—dropped on the table—freed from its troublesome companion. Scarcely a pound of material was lost.

[1] Samples were shown.

*Read at the meeting of the New Jersey Pharmaceutical Association, June, 1915.

CLEANING CAPSULES.

How do you clean capsules after you have filled them with powdered material? Do you wipe them on the towel at the prescription counter? Whether that towel is clean or otherwise? Well, don't confess what you do—just try this. Take a piece of absorbent gauze of such size that it can be folded into a square of eight or ten inches, having four thicknesses of material. Place the capsules to be cleaned in the center of this. Gather up the corners and edges of the gauze into one hand, in such a manner that the capsules are suspended in a loose bag. Now rub this bag across the palm of the other hand a few times, pressing firmly. Each capsule is rubbed between the layers of gauze, and every particle of powder is removed, leaving it bright and clean.

GRANULATING.

You are in a hurry for some camphorated oil. You crush the camphor into coarse lumps, and throw it into the oil, put the mixture on a water-bath for an hour or so, and return to find lumps of camphor still in evidence. Then, if you are of that temperament, there follow a few splutters, dashes, blanks and exclamation points, but the camphorated oil is still unfinished. Before you try it again, go to your hardware dealer and spend from 75 cents to $1.25 for an almond grater. Put your camphor into this machine, a few lumps at a time, turn the handle, and have the camphor in an almost uniformly fine granule. Add this to your oil. Put it on the water-bath and have your preparation—less the dashes, etc., in fifteen minutes.

Speaking of the almond grater, you will be surprised at the number of uses you will find for it. You can granulate castile soap for making soap liniment. You can granulate opium, if you make preparations of that drug. And you can granulate almonds and make your almond meal from real almonds.

SAMPLING NIPPLES.

Take a smooth piece of wood of convenient length—about one-half inch thick and six inches or more wide. Sand paper this perfectly smooth and mark off points one and one-half inches apart each way to the same number as you have styles of nipples. Attach three-fourths inch, or any convenient size, wooden button moulds, which you can obtain at any store dealing in dress making goods, at each point, by means of small brass screws, and over each peg, thus formed, a nipple is stretched. For larger nipples, like Hygeia, use the top of turned wood boxes of convenient size, with a hole drilled through the middle. For smaller sizes like the Maw style, use large round-headed brass screws. The nipples can be arranged on the stock selves in the same order as on the display board described. If so desired, a small label can be put on the board in front of each nipple, giving the name of that particular style, or its number, so that one can be picked from the proper box without disarranging the rest of the stock. The nipples should not be sold directly from the display board, but should be changed at frequent intervals so as to keep them in good condition.

SUBSTITUTE FORMULAS FOR SPECIALTIES.

OTTO RAUBENHEIMER, PHAR. D.

The substitution of one drug for another has been practiced from the earliest times. Was it not Claudius Galenus, the great Roman physician-pharmacist, who was about the very first to prepare a lengthy list of drugs, "Quid pro quo," a list which remained in use until about the Sixteenth Century.

Even at the present time the manufacturing chemists and the retail pharmacists are advocating the substitution of sodium salts in place of potassium salts, owing to the fact that the latter are quite scarce and much more expensive on account of the European war. In connection with this it should also be remembered that sodium salts possess two further advantages over potassium salts, namely, that they are more soluble and have a smaller molecular weight.

So much for drugs and chemicals, that is, their substitutes.How about preparations? How about substitutes for some of the proprietary preparations or specialties? It is needless to point out that the two standards in pharmacy, the U. S. P. and N. F. contain such substitutes. It is for this reason that on numerous occasions both of these works have been severely criticized. Personally, the writer has always held the opinion that it was perfectly legitimate and proper for the pharmacist to manufacture such so-called substitutes, providing, however, he sells these upon their merit and does *not* dispense same when the proprietary preparations or specialties are called for. Let it be thoroughly understood that the writer does *not* advocate the substitution of such preparations in place of the proprietary articles!

On several occasions and again at the Nashville Convention of the A. Ph. A., I had the privilege to present a copy of the Formulary of Pharmaceutical Specialties published by the Luxemberger Apothekerverein. This little formulary gives a great many formulas for specialties from Germany, France, and even the United States. The Latin titles are followed by the name of the specialty, for instance, Linimentum Capsici Compositum Pain Expeller), Emulsio Olei Jecoris Aselli (Scott's Emulsion), Antipyreticum Americanum (Antikamnia), and last, but not least, Bromidia (Bromidia Battle). This may serve as an illustration what the Luxemburg Apothecaries' Society is doing.

The writer has just received from the Deutscher Apotheke-Verein, Berlin, a copy of a booklet having the title "Sammlung von Vorschriften fuer Zubereitungen zum Ersatz von Spezialitaten des Feindlichen Auslandes," which translated into English means, "Collection of Formulas for Substitute-Preparations of Specialties from Belligerent Countries."

The preface of the book tells us that owing to the existing conditions of war, these foreign specialties are partly unobtainable and should *by all means* be replaced by substitutes which the German apothecary can very easily prepare himself.

It is needless to say that principally French and British proprietary preparations are dealt with, for instance.

Capsules Guyot, Cascarine Leprince, Eau dentifrice du Dr. Pierre, Liqueur anti-goutteuse de Laville, Capsules Pautauberge, Grains de sante du Dr. Franck, Injection Brou, Pilules de Biancard, Quina Laroche, Sirop d'Aubergier, Sirop de Dusart, Vin de Dusart, etc., etc.

Bishops Citrate of Lithia, Easton's Syrup, Eno's Fruit Salt, Roche's Embrocation, Beecham's Pills, Calvert's Carbolic Tooth Powder and Paste, Elliman's Embrocation, Hazeline-Cream, Hazeline Snow, Morison's Pills, Pink Pills, etc., etc.

I find that about one half a page is devoted to Browne's Chlorodyne, and it is claimed that the formula given is the original one which has been supplied from a British source through apothecary Mandowsky of Hamburg.

Another interesting feature of this booklet is that there are two and a half pages of specialties which are arranged in a table, in case they merely consist of one ingredient, as f. i., Santal Midy=Caps. gelat. Ol. Santali 0.3 Gm.

The writer, as chairman of the Committee on Recipe Book of the A. Ph. A., was indeed pleased to receive this Formulary, which no doubt will come in very handy in the compilation of formulas. This little book will no doubt convince us of the proverbial German ingenuity and may well serve as an example to American pharmacy and to the American Pharmaceutical Association.

THE COLLEGE OF PHARMACY, JERSEY CITY, June 21st, 1915.

MODERN BUSINESS METHODS FOR PHARMACY.*

E. FULLERTON COOK, P. D.

Notwithstanding the many signs to the contrary, pharmacy retains today many features which are distinctly professional, although the commercial side is rapidly increasing in importance. The desire on the part of pharmacists in the past, to maintain ideals which they termed "professional" has largely been responsible for failure to apply proper methods to the drug business, and we face today a condition in some stores where the commercial side or the merchandising end of the business is entirely eclipsing anything of a professional character; yet in other localities there are many signs which indicate that professional pharmacy is coming into its own and is advancing to a point never dreamed of in the past. It is quite safe to predict that the future will more sharply draw the line of demarcation between the so-called commercial pharmacy where merchandising is given almost exclusive consideration, and the store or laboratory where the emphasis is constantly placed upon professional activities and scientific work. Even though this condition is true, it nevertheless remains as a necessity of modern business that both types of pharmacists, if they would continue to exist, must understand and adopt methods in the conduct of their business which insure a profit. Now, these methods do not differ materially in

* Read at meeting Delaware Pharmaceutical Association, 1915.

principle whether they are applied to the most ethical professional man in his relation to his patrons or whether they are enforced by the highly departmentized and commercialized drug store.

A recent article in one of the largest national weeklies described, in an exaggerated form, the condition which exists in pharmacy today. The successful old-time druggist, many years in business, learns of the anticipated opening in his neighborhood, of a so-called "chain" drug store, conducted by a corporation and managed on the most approved and modern business principles. According to the story, he immediately retires from business, feeling that he was incapable of successfully competing with such methods, and, in talking with his friend, predicts the failure of all of the other older stores in the town, very shrewdly saying that, "The only possible hope for successful competition with stores of this new type is to adopt all of the methods which they are successfully using, and do it first, and a little better." This is doubtless an extreme view, because a successful pharmacist in a neighborhood should have an invaluable asset in the confidence which the community places in him, and because of his personal relations with patrons, and yet, the suggestion to learn modern methods, and immediately introduce them into your own business is the best possible advice and is worthy of the most earnest consideration. It is the intention here to briefly outline some of the principles which are being advocated today for successful business.

The keynote and business text, which should be foremost in thought, continuously emphasized and always be a guiding motive, is *service* to the customer. The adoption of this principle by the proprietor and his clerks will answer many petty problems which arise, and insures at once the proper attitude toward customers. Someone has said, "Love your customers, for out of them are the issues of business life," and this is but another way of expressing *service*.

A second essential, equally important, which must not be lost sight of by a business man, is the assurance that a *profit* is forthcoming. In other words, the two parties to the transaction: he who receives the service, and he who renders the service must both receive value or the transaction is not ideal.

In order to insure service and a profit there must be intelligent management in a business. The proprietor or manager should not be concerned too closely with the more minute routine or detail. He should have time to study the entire field of operation and be able to lay his campaign with every branch of the service before him, and with an intimate knowledge of every factor. Roughly stated, the business should be before this executive head in the following four divisions: *Purchases, Sales, Expenses and Profits.* These four departments are interdependent and all essential; and each requires a special study and control in its relation to the others.

Purchases: This branch of the business is its very backbone. Facing aggressive competition, the merchant knows that if he would sell at a price which will appeal to the intelligent customer and yet make a profit for himself, he must buy goods at the right figure. The goods sold must be of a quality which the trade demands and the price one which will enable him to meet competition and yet make a profit. This means, *first*, an intimate knowledge of the demands of the community. *Second*, the value and variety of goods offered and the best and cheapest market in which to buy. *Third*, a close watch upon stock so that over-

stocking is avoided and yet sales not missed by being "just out." Over-buying is a serious menace to profits since a turn-over of stock six times a year requires half as much capital as a turn-over three times a year. *Fourth,* in the purchase of goods the important point of taking discounts for prompt payment must not be overlooked. If this is done even semi-monthly and the discount is only 1 percent it means 24 percent interest on the money thus invested. In addition to this, the discounting of bills insures a relation with the wholesale house which gives the business man many favors in the way of bargains and special prices. This business custom also establishes a type of credit which is from one standpoint very desirable; and lastly, but not least, the discounting of bills relieves the proprietor of the worry about unpaid accounts and large bills coming due, the worry from which would often incapacitate him for handling the many store problems which arise.

Sales: Under this head the proprietor of a store must consider every means by which increased sales can be secured. Goods which have laid upon the shelf longer than sixty days become a serious menace to the profit account since it means stock and capital tied up and not working. How can this be stimulated? The man who simply waits until a customer comes into the store because he happens to be passing that way will soon find that someone else has not waited for the "just happen tendency," but has drawn to his own store by good advertising that prospective customer of yours who "might" have come your way. Sales must be stimulated by legitimate advertising methods but do not forget, again, that the customer must receive *service* and be pleased by his purchase. If this does not follow, it were better that the sale had not been made. No more difficult handicap can be imagined than dissatisfied customers and, on the contrary, no better advertising can be secured than through pleased and satisfied cutomers. Advertisement is the steam, driving many a large business to success, but it must be carefully applied. Probably the best and at least the first advertisement that every drug store should strive to offer is a clean and attractive store, served by neatly dressed, courteous and competent clerks. No amount of other forms of advertising will be worth while if the customer does not find in the store the attractive feature described i. e., prompt and efficient service.

The store, itself, should be arranged so that suggestive salesmanship can be stimulated to the highest degree. For instance, all preparations which relate to the treatment of the teeth should be attractively grouped so that when a customer buys a tooth-brush it will be possible for the clerk to ask, in a proper way: "Have you ever tried this mouth wash, which we are specially recommending?" or a tooth-paste of exceptional merit may be referred to, etc. Other allied toilet articles or general merchandise which lend themselves to suggestive salesmanship should be grouped.

Needless to say, proper attention should be given to window decorations and a part of the money set aside for advertising should be used in making these attractive. It would be wise to make it the duty of one of the clerks to study up ideas for the windows and, under proper direction, do the decorating. Frequently, one clerk will be found peculiarly qualified to do this.

Other forms of advertising should also be conducted from time to time. Newspapers, trolley advertising, small monthly papers, circulars, samples, premiums,

etc., etc., as may be best adapted to the particular business. A specific sum should be appropriated each year for advertising and expended in ways which bring the best results. Sometimes a remodeling of departments, new prescription equipment, new cases, increased soda water facilities, etc., may be the best form of advertising for that particular time. It has been frequently stated that at least 2 percent of the total sales should be used in advertising in order that a business may be maintained at its present standard and at least slightly increased.

One feature which is often neglected in a drug store is the proper training of the clerks. The proprietor or manager should develop friendly relations with the clerks and gain their confidence. It is only by coöperation, by training the clerks in salesmanship as well as the technical side of the business and by drawing out ideas from them, that a sales force with anything like maximum capacity can be developed. Rewards should be offered for the best ideas and merit acknowledged where it is found.

Expenses: This part of the business deserves equal attention. The best laid plans for purchases and sales may go for naught if expenses are not maintained in proper proportion. The store is compelled to have certain fixed charges. As a rule these should not exceed 25 percent of the average selling price of the goods. If the expenses are a larger percentage than this in relation to total sales the manager faces two possible remedies. First, some expenses may be reduced or entirely eliminated. Secondly, if the expenses are essential then the volume of sales must be increased so that the percentage of expenses will be brought within that which is legitimate. Every expense should be carefully recorded and then critically analyzed. Often, all expenses of the business are not recognized. Probably one of the most frequent failures to accord an expense in the drug business is the salary of the proprietor. As proof that this must be considered an expense, it is only necessary to recognize that the proprietor without assuming the responsibilities or risks of business could receive elsewhere an equivalent salary, and as still further evidence it will be recognized that if he were sick or compelled to be absent, another man would have to take his place, and that salary charged as an expense of the business. Another item which is sometimes overlooked is rent for the store room when the property is owned by the proprietor. Again, recognize that if you did not occupy the room some other business house would be paying you rent and so your business occupying the building should also be charged with rent before a real profit is secured. Therefore, rent, light, heat, salaries, (including proprietor's), office expenses, (such as bill heads, letter heads, envelopes, postage stamps, account books, etc.), telephone expense, advertising, breakage and interest on borrowed money, licenses, drayage, etc., must all be taken into account in summing up the total expense. It is often possible when a man has been in business for several years to estimate what these expenses should be, and establish a budget at the beginning of the year; if this is exceeded in any one month the cause can be ascertained and the leak stopped. The chain stores have worked this out very carefully and if any store exceeds the estimated expense, say for light in one month, the manager must explain why. The importance of this is evidenced by the fact that net profits are often based upon only 5 percent of the sales, and if the expense has been planned at 25 percent and in reality, through carelessness, reaches 30 percent, the entire profit is wiped out.

Profits: As was stated at the beginning, a profit as a result of business is absolutely essential; otherwise, the business is a failure. How can this be insured? It is only possible through the establishment of a system for pricing goods and then working the system through the aid of accurate accounting. The vast majority of druggists in the past knew practically nothing about modern accounting. They were so overwhelmed by the daily routine and detail that no time was left for this important aid to success and the result only too often was "no profit" at the end of a year of laborious and exacting work. It is far better to devote a little more time to accounting so that the business is handled intelligently and a profit insured than to do a large business and find at the end of the year or five years of hard work that instead of a profit the result is bankruptcy. It seems hard to impress this fact upon many druggists but it is one of the things which the introduction of chain stores is compelling every business man to recognize, and this very fact will be a blessing in disguise to the pharmacist of the future.

Another point which has not been thoroughly appreciated is the fact that the Internal Revenue Department of the United States Government is checking up more and more closely those who should pay the income tax. The pharmacist who is conducting a properous looking business may at any time be asked to give an accurate accounting and failing to do so correctly, face the possibility of a heavy fine.

A system for pricing which will insure a profit if properly carried out was recently suggested by Mr. Liggett, of the United Drug Company. This outline may not be adapted to every business because as the amount of professional work, including prescription filling, increases, the first cost of goods decreases and the clerk hire increases, but it serves well to illustrate the point. It is as follows:

Assuming that the sales are $300.00 a month, and stating all percents as percent of the total sales, then:

Total sales	$3000.00	100 per cent
First cost of goods	2000.00	66⅔ per cent
Gross profit	$1000.00	33⅓ per cent

From this $1000.00 must now be paid all expenses, and from it must also come the net profit, if any is to be made. It should be divided about as follows:

Rent, heat and light (the only fixed charges)	$210.00	7 per cent
Clerk hire	360.00	12 per cent
Advertising	60.00	2 per cent
All other expenses	120.00	4 per cent
Net profit	250.00	8⅓ per cent
	$1000.00	33⅓ per cent

Finally, without giving extensive detail, accurate accounting is a prime essentail and at least three divisions are desirable for a store where the proprietor must keep the books. First, a loose-leaf ledger plan whereby the customer's credit accounts are properly handled; second, a satisfactory Stock Record with accompanying facilities for taking an annual inventory; and third, a complete record of every transaction connected with the business in some concise and yet efficient form.

Editorial

E. G. EBERLE, Editor.....63 Clinton Building, Columbus, Ohio

I WILL!

CATO for many years closed his address with a never changing charge that "Carthage must be destroyed" until the thought and determination became firmly fixed in the mind of every Roman.

The American Pharmaceutical Association endeavors always to be constructive and with the purpose of being of increasing service to pharmacy, persistently solicits accession of membership. A new year is beginning, for the annual meetings of the Association correspond to the commencement exercises of schools, and the best way to make resolutions effective, is not to procrastinate in the resolve. Every member of the A. Ph. A. must realize that he could each year have his name signed to at least one application for membership, if he was possessed with "that something" which activates the "I Will!" There are some who never permit a year to pass without one or more applications to their credit, why not everyone? The best time is Now. Place a card with the prescription "I Will!" on your desk and fill it.

An organization is representative of those who compose the membership and the progress of the association is a corollary to individual improvement. The progress of an association is thought in action. Gather individuals into an organization and assign to them a strict course of procedure from which they must not deviate and stagnation will soon result.

The American Pharmaceutical Association has an enviable history but its continuing strength is in the members who work for to-morrow instead of to-day, who try to find new ways and better ways for doing the work they are doing now, constantly improving the methods they are using and imbued with the spirit of altruism that has always characterized the Association.

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LOOKING FORWARD.

AN editorial in a recent number of the Pharmaceutical Journal and Pharmacist brings to our attention that English pharmacy and pharmacists have very much the same problems to solve that engage us. So close indeed is the relation that it would be quite easy to adapt the editorial referred to for the Journal of the A. Ph. A., by simply using the designations and terms applied in this country.

The editorial presents that there are no fixtures in the universe of change—no oases of finality in the ceaseless struggle for principles and the deduction is made that no sooner is one set of adverse circumstances resolutely grappled with and overcome, than another, and perhaps more formidable series is generated on the debris of vanquished evils. Then various legislative actions are cited and the esti-

mate of the legislators is stated in very similar verbiage of dicta employed by us. We, evidently, are no more nor less reluctant to allow the full educative influence of the knowledge of perpetual succession of trouble in ever-changing guise, to direct our action by studied and systematic methods. We may theorize, criticize and even plan, but here our activity all too frequently ends.

A reorganization of the House of Delegates is contemplated and it is to be hoped that the great possibilities of such a body will be developed into deeds of usefulness. There are many opportunities for rendering service to pharmacy, but in utilizing these, the first essential should be a very lucid understanding of the promotions contemplated. "What are we here for?" is just as relevant a question in pharmaceutical as in political conventions.

We will not anticipate the program of action: this much however may be said, every pharmacist is concerned in the shaping of the future of his calling and should not withhold his voice from the counsels of the state associations so that the promotions of the House of Delegates may be co-operative. Every one of the state organizations should provide for systematic discussions of policies that may be adopted or endorsed and the respective state associations should see to it that every pharmacist, whether member or not, has an opportunity of participating in the consideration.

Legislation pertaining to pharmacy will doubtless have first attention. Just a few thoughts are offered: A thorough understanding of the motives which prompt legislation regulating pharmacy is necessary. Legislators are more easily persuaded by their constituents than any arguments that committees of pharmacists may present. Pharmacists are seldom represented in legislative bodies and few of the members have a knowledge of pharmaceutical needs, still they are usually very reluctant to accept of expert advice.

These statements suggest that means should be provided in advance, for enlightening those who legislate and more particularly to outline a plan of procedure and not become dependent on evolving a course of action on the spur of the critical moment and without the possibility of consultation. Whatever legislation is necessary should be carefully outlined, each measure drafted into a bill ready for action, and arguments for its support should at the same time be prepared, as few laws are enacted without a contest somewhere. Pharmacists should realize the necessity of having representation from among their own number, not only in state legislative bodies, but also in Congress. In the adoption of legislative proposals, uniformity should always receive most thoughtful consideration as well as the enactment of sane legislation.

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THE JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

PREFERENCE is still shown by some members of the Association for the former annual volume, others are advocating a semi-monthly publication. These are the extremes, with a growing preference for the latter. Many others would take this view if the Association received sufficient income, permitting of the issuance of a semi-monthly Journal, for with a monthly publication there is of

necessity a delay in printing some of the papers, read at the annual meeting, and this does not always do justice to the contributors.

It is hoped that the membership of the Association will increase numerically and provide larger revenue; the suggestion made by some that the annual dues be doubled would certainly not be conducive to the growth of the Association. There is only one other source of revenue and this is the advertising in the Journal. There are many who do not now patronize the Journal, whose advertising would be acceptable. It is somewhat strange that manufacturers of apparatus, appliances, prescription ware and even of supplies for manufacturing pharmaceuticals, have not availed themeselves of the opportunity the Journal offers in reaching a class of patrons, who are extensive buyers of these goods. Members will lend a helping hand, if they will bear this in mind when making purchases.

The Journal does not seek to become a competitor of trade journals, its field for securing advertisers is circumscribed, neither is it contemplated to bring other pressure to bear than the persuasion that patronage from the manufacturers will produce business for them.

While the suggestion for a semi-monthly publication has been carefully considered, a conservative view ought to be taken and a larger source of income be developed before incurring the greater expense that would obtain. The only production costs that would not relatively be increased are those of the office and editor.

The suggestion has been made also that the proceedings of the Association be not published in full, but more or less in abstracted form. It is extremely doubtful whether this is advisable. It is a difficult matter to condense the minutes of the convention and do everyone justice, or perhaps, better, in every instance give the thoughts that were intended by members participating in debate. The original minutes are always preserved for reference in case of dispute, but such a radical change seems very impracticable, if not dangerous. Some of the more lengthy discussions are now abbreviated, but only by excision of the less important remarks or duplicated statements.

When the present editor took charge of the Journal, he asked for suggestions, as to how the publication could be made of greater service, more interesting and valuable to the members. This invitation is now repeated; every member is asked to look upon the Journal as his and her publication and such personal interest should persuade them to assist in its production and promotion. The value of the Journal is realized now, and by thoughtful and careful co-operation it will become the strong incentive for enlisting many in the Association who are not members at the present time.

We know the membership of the American Pharmaceutical Association too well to permit of other conclusions than that the Association will become still more influential as a factor in American pharmacy and at no time in its history has the opportunity for development been greater. Some of the members are perhaps too theoretical, others somewhat impatient, but the Association maintains an equilibrium, while making safe and steady progress. The Journal subserves the Association and follows its dictates.

PAPERS.

LAST year the General Secretary was authorized, if he deemed advisable, to have papers printed in advance of the meeting. The only reason for not doing so this year was that the papers did not reach the chairmen in time. Members returning from the annual meeting find work waiting their attention, thereafter business matters interfere until the approach of next convention compels them to give time to the preparation of papers. Again, a late day has developed a subject of importance, and so most of the excuses are not make-shifts, but embody good and sufficient reasons for delay. When members have papers in preparation that they think should be printed in advance of the meeting, so that reprints may be placed in the hands of members in convention, such possibility will be promoted by sending them to the chairmen of the Sections, early enough to be edited and revised, if necessary.

Every paper should be accompanied by a brief abstract. This will assist the members in following the author in his presentation of the paper and should the editor desire to use all or part of it as an introductory to the article, the statements of the writer will be correctly interpreted.

Some articles are unnecessarily lengthy, frequently the only object of many lines is to embellish, occasionally there is needless repetition. This is a subject that concerns the reader and constitutes one of the trials of the editor. The judgment of the latter is not infallible but it may be taken for granted that he tries to show deference to the contributors. Notwithstanding this, a very creditable paper may not be available for use in the Journal, for no other reason than that the story might have been told in one-fourth the number of words and with better effect. This has no reference whatever to articles that would lose their value by abbreviation and thereby do the writer an injustice. Another class of lengthy papers in the acceptance or non-acceptance of which the editor may have an unpleasant experience, are those that can hardly be condensed and only interest a very limited number. And still another trial comes when a number of papers on the same subject, with comparatively slight differences are submitted about the same time. These are a few of the difficulties that should persuade writers to be more or less considerate in their judgment of the acts of the editor.

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WHAT IS A DRACHM?

IN a paper presented at the recent meeting of the Pennsylvania Pharmaceutical Association, and under above caption, Professor J. W. Sturmer takes issue with Doctor C. L. Alsberg anent his ruling that the designation, dram, shall be taken to refer to 1-16 of an avoirdupois ounce, or 27.34 grains.

No dvantage can possibly be gained by this ruling; 1-16 ounce is very infrequently used in commerce. Doctor Alsberg evidently did not consult those who are most interested and has certainly created an opportunity for confusion. The term, dram, is frequently mis-applied for 1-8 ounce; manufacturers make use of the latter designation for such fractional part of an avoirdupois ounce.

A ruling which would define the value of the weight-term, dram, as of sixty grains would be acceptable, first, it would do away with that denomination in the avoirdupois system of weights and secondly, there is every reason for simplifying the spelling of the word. The "ch" is not pronounced in English usage and for the Latin name, the translation would be just as proper as that of any other title or term. This then brings on the further thought that the use of the official English names in prescription writing is quite as convenient, just as definite and the chances are prescriptions would be more correctly written.

The unit of weight of the metric system is written both gram and gramme. The reason has been assigned, aside from the origin of the word, that gram, in writing, may be mistaken for grain and hence the spelling, *gramme*, is a safe-guard. Doubtless this is true, but except in print the word gramme is seldom given in full.

The change from cubic centimeter to milliliter should be acceptable and it is hoped physicians will drop the denomination "c.c." and write instead "mil." True it is that "mil" is a coined word, but of such is language. While the values of weights are based on measurements, the denominations of the different systems should not have similar names.

It is hoped that the American Pharmaceutical Association will approve the change from cubic centimeter to mil, and disapprove of the ruling made by Doctor Alsberg, and urge that instead, the value of a dram be fixed at sixty grains. Pharmacists ought to have established this valuation long ago by adopting *dram* as the English for the Latin, *drachma*. The Century Dictionary defines the word *dram* and refers the reader to this definition for the meaning of *drachm*, hence clearly expresses the preference of this authority.

E. G. EBERLE.

THE NUMBER AND KIND OF DRUG ADDICTS.*

M. I. WILBERT.

In recent years social workers, reformers and newspaper writers generally have vied with each other in the presentation of startling data regarding the number and kind of drug addicts in this country. In doing so they have established the general impression that those engaged in the various branches of medicine and particularly those engaged in the practice of pharmacy, have been delinquent in that they have failed to safeguard the sale and distribution of habit-forming drugs with the care that properly should have been exercised.

Among the statements frequently met with in current papers and periodicals the following are representative:

"More than two percent of the people of this country are addicted to the use of opium and cocaine, and this number is being augmented at the rate of 100,000 a year."

"Fully 90 percent of the opium we import is used for illegitimate purposes."

"For every ounce of cocaine employed legitimately there are 200 ounces consumed illegitimately."

"Physicians are responsible for at least 95 percent of the habitual users of opium, its compounds and alkaloidal salts."

"More dope fiends have been created by the refilling of prescriptions than in any other way."

"At least 10 percent of the 45,000 drug stores in the country exist largely upon the illegitimate sale of habit-forming drugs."

"Many of the proprietary remedies sold to the laity contain a sufficient amount of dope to develop and to maintain a drug habit."

"The use of heroin as a 'kicker' in patent medicines is comparatively common."

"The Harrison law, excellent so far as it goes, is effectively negatived by the exceptions included in Section 6. The most exacting dope fiend could not ask for a larger hole in the law. If he can get an unlimited amount of his favorite drug in a nostrum form anything else that the Harrison or any other law may or may not provide is a matter of indifference to him."

As has been pointed out before (P. H. Rep., 1914, v. 29, p. 3180) some, at least of these statements are not based on reliable data, while others, having the elements of truth, are misleading either because of their incompleteness or because of the partial misstatement of fact. While it is unfortunately true that the number of drug addicts in the United States is disgracefully large it does not, and of necessity cannot even approximate the maximum that has been stated.

Practically all of the opium and coca used in this country is imported through legitimate channels, and because of the comparatively high import tax considerable care is exercised to insure the reporting and recording of all of the products

* Read at meeting of Pennsylvania Pharmaceutical Association, 1915.

at our disposal so that we have fairly reliable data on which to base an estimate of the amount of either drug that is available for all purposes.

Converting the recorded quantities of the several drugs imported into average doses, as presented in the Pharmacopœia of the United States, we find that for some years the total amount of these drugs imported has been fairly uniform and will aggregate an average of approximately 2,500,000,000 doses of opium, its derivatives and alkaloids, and 325,000,000 doses of coca leaves and cocaine. These figures serve to definitely fix the amount of available material and quite regardless of the proportion of the several drugs that may be used legitimately or illegitimately the sum total of illegitimate use cannot well exceed the sum total of the available material.

A rather interesting source of information regarding the actual number and kind of drug addicts is available through the enforcement of the Tennessee anti-narcotic law of 1913. Lucius P. Brown, the State Food and Drugs Commissioner of Tennessee, in a recent report (Am. J. Public Health, 1915, v. 5. p. 323-333), says that after twelve months of operation there were registered in the State of Tennessee under the provisions of the anti-narcotic law 2,370 persons of all ages and years. These included 784 or 33.1 percent males and 1,586 or 66.9 percent females.

The average consumption per day of the morphine addicts was 8.5 grains or approximately 1000 doses each month or 12,000 doses a year. The State of Tennessee contains slightly more than 2 percent of the total population of the United States and on the supposition that the same ratio of addicts and the amount of material consumed will hold good throughout the country we would have a total of something more than 118,000 drug haibtués consuming approximately 1,416,-000,000 average doses per year.

Granting the somewhat improbable assertion that 90 percent of the opium imported is used illegitimately at the rate that it is said to be consumed in the State of Tennessee we could have, as a maximum, not more than 187,000 users of opium, its derivatives and alkaloids, in all parts of the United States.

In regard to the use of cocaine a recent authority asserts that one ounce of cocaine is enough to keep 50 fiends thoroughly well doped for a week, or in other words, that one ounce of cocaine is enough to keep 1 fiend thoroughly well doped for a year.

Granting that all of the available 150,000 ounces of cocaine were used illegitimately there could be at this rate a total of 150,000 cocaine fiends in the United States.

That this estimate is somewhat high would appear from the report by C. G. Steinmetz, Jr., (J. Am. M. Assoc., 1915, v. 64. p. 1271), who made a study of 15 cases of cocaine habit acquired by men employed where the drug was manufactured. The daily quantity taken varied from 20 to 60 grains; the method of taking was solely by snuffing it. Even on the basis of the lower quantity the consumption per annum would be in the neighborhood of 15 ounces and thus reduce the possible number of cocaine fiends very materially.

Pharmacists who have been unfortunate enough to meet with patients addicted

to the use of cocaine will appreciate that the figures given by Steinmetz are much more nearly in accord with actual practices than are the figures previously quoted. Taking all the available facts into consideration it would appear that the estimate made by the Committee of the American Pharmaceutical Association some years ago, that the drug addicts in this country do not exceed 200,000 in number is approximately correct even at the present time.

That the previously made estimates of the number of drug addicts in this country were altogether erroneous is further evidenced by the published reports on hospital admissions since the Federal anti-narcotic law came into effect. It had been predicted that the result of the enforcement of this law would be a besieging of hospitals by drug addicts and a crime wave of national scope accompanied by a trail of suicide and death. While the effect of the enforcement of the Federal anti-narcotic law has been clearly evidenced by hospital reports the results have been by no means so far reaching or so startling as had been expected.

The most shocking of the several available reports is that of Wm. D. McNally, Coroner's Chemist, Cook County, Chicago, (J. Am. M. Assoc., 1915, v. 64. p. 1264), who states that during the month of March, seven deaths occurred in Cook county that were indirectly due to the sudden cessation of the use of morphine. Four died from taking an overdose of morphine. One of the four died from taking an overdose of "Dr. Weatherby's Remedy," a morphine cure containing over seventeen grains of morphine sulphate per ounce. During the month of December, 1914, not a single death occurred in Cook county from morphine. During January and February the record shows one death for each month.

Clifford B. Farr, (J. Am. M. Assoc., 1915, v. 64, p. 1270), reports that since the enactment of the Harrison law the number of admissions to the Philadelphia General Hospital of cases of morphine and heroin addiction has markedly increased. In the first 68 days of 1915, 86 patients addicted to heroin were admitted, while in 1911 there was not one.

Other cities have reported similar results but so far as known the amount of suffering has not in any way measured up to the results that were predicted by newspaper writers and others when the Federal anti-narcotic law was under consideration.

Now just a word in regard to the origin of drug addiction. C. E. Terry, City Health Inspector of Jacksonville, Florida, in the report of a study of local conditions (Am. J. Public Health, 1914, v. 4, p. 32), states that of 213 cases of drug habituation studied by him personally their origins in the order of their frequency were as follows:

Through physicians' prescriptions or treatment personally administered 54.6 percent.

Through the advice of acquaintances (for the most part themselves users), 21.6 percent.

Through dissipation and evil companions 21.2 percent.

Through chronic and incurable disease 2.4 percent.

The conclusions reached by Terry agree very well with those enunciated by Brown that from 90 to 95 percent of the persons habitually using narcotics do so entirely unnecessarily.

It should be remembered that the figures quoted above refer solely to the number and kind of addicts, generally recognized as such, who use narcotic drugs in comparatively large amounts. There is still another, and a very pathetic side to the drug addict problem that has as yet received altogether too little attention. This problem involves the ways and means of generating the habit and also includes a consideration of the unfortunate who for one reason or another feel compelled to continue the use of comparatively small amounts of a narcotic drug.

Practically all authorities are agreed that the continued use of cocaine is a vice rather than a disease and the Federal as well as State anti-narcotic laws appear to recognize this fact and provide special safeguards to prevent the indiscriminate sale or distribution of even small amounts of cocaine or of preparations containing it.

With opium, morphine and related products on the other hand no such precautions have been taken despite the fact that addiction to the use of these drugs is generally recognized as a condition over which the individual patient has little or no control.

Up to the present time altogther too little authoritative information is available regarding the origin and subsequent progress of the condition commonly described as morphinism, because physicians usually see only the fully developed cases or the at times spectacular end results.

The morphine or opium addict, as a rule, is secretive and generally seeks relief in ways that are destined to make him an easy prey for the charlatan or advertising quack who promises a positive cure with secrecy.

Lambert, Towne, and others, who have made a study of drug addiction, agree with the conditions of Terry quoted above that a very large proportion of the persons addicted to the use of opium and its alkaloids have acquired their habit from the thoughtless renewal of prescriptions containing narcotics or by self-medication with preparations containing comparatively small quantities of an opiate.

In this connection it may be said that it is not generally realized that the taking of even small doses of opium or morphine, at regular intervals for a continued length of time will be more likely to develop the opium habit than the occasional indulgence in larger quantities.

It has been asserted (Pettey, G. E., J. Am. M. Assoc., 1913, v. 61, p. 566), that the average person will develop an addiction to opium or one of its alkaloids after thirty days of daily use and that after the continued use of such a drug for three months or more, it is practically impossible to discontinue its use without medical aid.

With these several possibilities fairly well established it would appear to be unfortunate to endorse or even to countenance exception clauses in anti-narcotic laws, such as Section 6 of the Federal law, which permit of the indiscriminate sale or distribution of preparations that not alone may but positively will establish a habit that once established cannot readily be overcome.

In the Federal anti-narcotic law we have the possibility of an accurate survey of existing conditions in connection with the use and abuse of certain narcotic drugs. The findings if they can be made a matter of record will place the blame for the illicit use of proscribed drugs where it rightfully belongs and will suggest ways and means for correcting existing abuses.

To secure efficient restrictions on the sale and distribution of narcotics, and to demonstrate that they are not primarily to blame for the generation and continuation of the addiction referred to, pharmacists individually should not alone be willing to comply with existing requirements under the law but should see to it that others engaged in the same line of business comply fully with the spirit as well as the letter of existing laws and regulations.

There can be no gainsaying the fact that the amounts of opium and of coca consumed annually in this country are out of all proportions to the actual need for medicinal purposes but to locate the existing leaks the followers of all branches of medicine, and particularly the men engaged in the practice of pharmacy, must make consistent and persistent efforts to purge themselves of even the suspicion of being directly or indirectly to blame for existing abuses.

THE STANDARDIZING OF PHARMACY LEGISLATION.*

J. H. BEAL, URBANA, ILL.

Judging from the multitude of restrictive and inquisitorial measures offered in the legislatures each year, the dealer in drugs and medicines should be regarded as a dangerous member of society, who needs to be closely looked after by those members of the community who find their chief enjoyment in regulating the business of other people.

In February of the present year, the writer began receiving abstracts of the bills affecting pharmacy which were pending before the various state legislatures. In April these abstracts made a pile nearly eight inches in height, each sheet representing from one to four or five bills. The original bills from which these abstracts were taken, all of them affecting pharmacy in some respect, if brought together in one place, would probably have made a pile of four or five feet in height, and this was for approximately one-half of the legislative season.

Some of these measures no doubt represented really needed and useful legislation, as they seem to have done in Illinois, but it is safe to say that the majority of them represented the meddlesome attempts of half-baked reformers who possessed only the vaguest of ideas on the subjects they sought to regulate, and their enactment would have been followed by grave inconvenience and damage to legitimate business without corresponding benefit to any one, unless to those for whom the bills sought to provide positions and salaries.

Some of these bills proposed to regulate the drug business in general; others confined themselves to particular features. Many of them related to the same subject, but no two of them were exactly alike in the regulations which they proposed to establish.

Those engaged in almost every other species of commerce and industry could tell the same tale of foolish, unjust and hurtful attempts to regulate the conduct of their affairs by legislative enactment, and the prayer of the whole business

*Read at the meeting of the Illinois Pharmaceutical Association.

world today is to be relieved from constant meddlesome and pernicious interference on the part of the law-makers.

The mental attitude of the modern business man bewildered in a maze of legal restrictions is cleverly expressed in the following jingle:

"There's law for this and law for that,
The man in business sighed,
It keeps me guessing where I'm at
And how my hands are tied.
"My great concern today is not
That I may shortly fail.
I have to give my every thought
To keeping out of jail.
"For profits that may comfort me
No longer can I plan,
It's taking all my time to be
A law-abiding man.
"Oh, sorry is the plight I'm in,
I have no path to choose,
The court will nab me if I win,
The sheriff if I lose."

—*Anon.*

There was a time when the manager of a business needed only to insure the efficiency of his manufacturing processes and the quality of his products, and to provide the means for bringing his wares to public attention. Today one of the most important agencies of any line of industry or commerce is some agency to prevent its destruction through ignorant and fanatical legislation. There is no class or kind of commercial or industrial enterprise in existence, no matter how honestly or carefully conducted, that would not be utterly destroyed if those who are concerned in it were to accept without protest all of the foolish and meddlesome measures proposed for its regulation. And, be it remembered, all of this mass, or rather "mess," of regulation is proposed in the name of reform and in the alleged furtherance of the general welfare.

Conservative and Radical Reformers.—Man is a moral animal, in aspiration and theory at least, and it is natural for him to seek constantly the moral improvement of his race and age. With such aspirations every one worthy of the name of citizen must be in sympathy, but there is a wide difference of opinion as to the best methods of bringing them to practical realization.

The conservative reformer views the improvement of society and the amelioration of social evils as a regular and uniform process of growth and education; the radical conceives reform as a violent and explosive destruction of old institutions and the forcible introduction of new ones.

The typical radical is always more or less of a bigot, and when hot on the trail of a real or imaginary evil, his sense of moral values is usually so much disordered that all other human issues sink into insignificance compared to the particular ism to which he is pledged. His convictions are so intense that they degenerate into obsessions, and he is likely to consider any method justifiable that promises to contribute to the success of his cause. Principles of equity and justice that have been recognized for ages are of no account with him, if they

interpose any obstacle to his short-cut methods, or would delay the immediate attainment of the object upon which his heart is set.

His creed is:

THE BIGOT'S CREED.*

"Believe as I believe, no more, no less;
That I am right, and no one else, confess;
Feel as I feel, think as I think;
Eat what I eat, and drink but what I drink;
Look as I look, do always as I do,
And then, and only then, I'll fellowship with you.

"That I am right, and always right, I know,
Because my own convictions tell me so;
And to be right is simply this, to be
Entirely and in all respects like me;
To question, doubt, or hesitate, is sin.
I reverence the Bible if it be
Translated first and then explained by me;
By churchly laws and customs I abide,
If they with my opinions coincide;
All creeds and doctrines I admit divine,
Excepting those which disagree with mine.

"Let sink the drowning if he will not swim
Upon the plank that I throw out to him;
Let starve the hungry if he will not eat
My kind and quality of bread and meat;
Let freeze the naked if he will not be
Clothed in such garments as are made for me.

" 'Twere better that the sick should die than live,
Unless they take the medicine I give;
'Twere better sinners perish than refuse
To be conformed to my peculiar views;
'Twere better that the world stand still than move
In any other way than that which I approve."

The Extravagance of the Reformer's Statistics.—One of the characteristics of the radical reformer is the extravagance of the statistics by which he seeks to show the imperative necessity for the immediate enactment of the particular measure which he happens to be advocating. If we accept his figures at their face value, we marvel that civilization has been able to persist under the burden of evil which his computations would establish.

As a rule we may safely scale the enthusiastic reformer's figures by ninety percent, and still have left sufficient to cover all of the evils which have actual existence, with a liberal unused margin around the edges.

This exaggeration by the reformer is due partly to the natural disposition of the enthusiast to accept as true whatever he wants to believe, and partly, in some instances at least, to a deliberate intention to deceive. On one occasion a state official charged with enforcing the food and drug laws asked my opinion con-

* Source unknown.

cerning a report which he was about to submit to the governor and legislature. My answer was that it would be a very good report if it did not contain so much fiction, to which he replied that if he did not "lie like sin" his department would not be considered of any account, and the legislature would not grant sufficient appropriations to pay half his inspectors and office force. In other words, the public has so long been fed upon extravagant statements concerning the evils in foods and drugs, that its jaded emotions will not readily respond to simple statements of the actual facts.

To the well-balanced, conservative citizen the law is merely a formal expression of the well-settled convictions of the majority, put into statute form for the purpose of compelling the obedience of that minority of the community who are not regardful of moral obligations, and to such a reformer the essential work of reform consists in the education of public opinion to the point where his own theories as to the citizen's civil and moral obligations shall become the faith of the many.

The theory of the radical is that statute law is an instrument for compelling other men to believe as he does, and instead of waiting for the slow and tedious process of education, he endeavors by frenzied declamation and the fury of his assault upon the general assembly to impose his will upon the majority.

In theory our newly-enacted laws represent the will of the greater number; in practice they represent the will of the comparatively small number who know best how to work the legislative machinery.

Nine-tenths of the laws enacted in any state the past winter would have failed if they had been submitted to a popular vote, either because a majority of the voters would have been opposed to their provisions or because they would not have cared enough about the measures to vote for them. That these measures were made into laws was not due to corruption or incompetence on the part of the law-makers, but rather to the defects inherent in our system of law-making, and to the fact that every man in public life soon learns that he has more reason to fear an active minority that will go to the polls and vote than a passive majority that will only stay at home and grumble.

The Sham Reformer.—Notwithstanding the bad manners of the honest radical and his constant attempts to reverse the laws of nature, he is much to be preferred to the commercial reformer, or the pestiferous individual who follows the mending of other men's affairs as a gainful pursuit. He is the wily individual who hitches his personal chariot to some phrase or doctrine that stands for a great moral principle, or which represents some grand humanitarian service, secure in the knowledge that with such a motive power he can travel farther on the road to successful popularity and with less critical inspection of his personal baggage than in any other way. He specializes in moral political issues, and is usually popular and prosperous.

The formula for passing an alleged reform bill through the easy-running law-making machine, provided it is one that does not involve a matter of party policy, is comparatively simple. Given a measure with a humanitarian title, a few sensational newspapers to print editorials and play up the propaganda, with half a hundred men in different parts of the state to write letters to members of the legislature, and the trick is done.

The passage of a bill of this character is a commercial proposition, like the building of a house or the buying of a farm, the two great essentials being to properly finance the movement and to select an experienced manager to conduct the campaign. So well is this understood that moral reforming, or the putting through of legislation that can be made to wear a moral label and appeal to the emotions and sympathies has come to be a regular business, like the conducting of carnival shows or of evangelistic revivals. You can hire a troupe of expert reformers just as you can hire a troupe of expert evangelists, with all of the machinery necessary to the conduct of their highly specialized profession, including the services of experienced spell-binders and leader-writers, and of one or more periodicals. The managers can furnish testimonials of former successful campaigns to show their ability, and you can contract with them either on a flat rate basis, or for a percentage of the gate receipts; or in case the reform is conducted under the auspices of a periodical publication, you can pay in subscriptions or by the purchase of advertising space.

It is by virtue of such methods and our loose system of lawmaking that we have laws passed ostensibly in the interest of the public health and welfare, but in reality to foster the business enterprises of those who financed the propaganda that procured their enactment; that in some states we have statutes expressly prohibiting the doing of things which the statutes of other states expressly command to be done; that in one commonwealth a given subject is legislated upon in one way, and in the adjacent commonwealth in an entirely different way, so that the man who does an interstate business must have as many different labels and as many formulas and methods of manufacture as the number of states in which he does business. In fact, under our hap-hazard and helter-skelter system, laws are so easily passed and so promptly forgotten that it occasionally happens that the same measure is placed upon the statute books twice, its first enactment having been overlooked by the enthusiasts who were more intent on passing new laws than upon enforcing the old ones.

A Proposed National Policy Regarding Drug Legislation—From the annual flood of new and unnecessary laws there is hope of at least a partial relief through a general agreement of the drug trade in all of the states to the effect that hereafter all drug legislation of every kind, no matter from what source it comes nor by whom presented, shall be resolutely opposed unless it has first received the consideration of the national pharmaceutical organizations and also of the association of the state where it is proposed for enactment.

The adoption of such a general policy would not mean that the drug trade intended to set itself in opposition to any proper measure for public protection, but it would be the giving of notice that the trade will no longer serve as a punching bag for every fanatic with an itch for publicity, and that hereafter proposed drug legislation shall be held up until its necessity is established upon some better evidence than the unsupported statements of its proponents, and until there has been ample time to analyze its provisions and to estimate their probable effects.

It is to be expected that the hysterical reformer who believes his pet proposition to be of supreme importance to human welfare, will assail any policy that will tend to prevent its immediate adoption. Our answer should be that if his propositions are not good enough to withstand the cool and discriminating dis-

cussion of the pharmaceutical associations, they are not good enough to be placed on the statute books.

The Preparation of Standard Forms of Food and Drug Laws.—A second step towards relief from the constant menace of fantastic legislation is for the drug trade through its national and state organizations to begin the standardizing of the laws relating to pharmacy by uniting in the preparation of a complete series of model forms or patterns covering every phase of legal drug regulation.

It is true that some model drafts have previously been issued, but they have usually represented only a single organization, and at most have covered only a fraction of the field of food and drug legislation. The series of drafts here proposed would be the result of the deliberations of every branch of the drug trade, and would cover every phase of the subject.

It is not likely that all of the associations would arrive at a perfect agreement upon every detail of the drafts, but it is morally certain that the more generally the drafts were discussed the fewer would be the points upon which there would be disagreement, and the final result would be a material step towards the standardizing of pharmacy legislation and towards substantial uniformity in the food and drug laws of all the states, not of course uniformity in all particulars, but uniformity in all matters of importance, with such variations only as were required to meet special conditions.

A practical example of this method of standardizing pharmacy legislation is shown in the method adopted for promulgating the N. A. R. D. model for a state anti-narcotic law to bring state laws into conformity with the Harrison Law. This draft was prepared by a special committee after much serious thought and consideration, but the committee was not so vain as to assume that its efforts were incapable of improvement. It is expected that the measure will be submitted in turn to the various state and national associations for further discussion and amendment, so that when finally completed it may be regarded as representing the very best thought of the entire drug trade upon this subject, and fit to serve as a reliable pattern which can be consulted whenever state legislation upon the subject of narcotic drugs is being planned.

A committee of the American Pharmaceutical Association is now working upon the draft of a general pharmacy law, which no doubt, will be also submitted to all of the other pharmaceutical associations for discussion and the suggestion of amendments.

It is not possible for any one individual, or for any single group of individuals to foresee and provide for all of the contingencies likely to arise from the introduction of new regulations into so complicated a business as the manufacture and distribution of drugs and medicines, and no measure proposing either to change or to add to the existing laws on the subject should be placed on the statute books before two or three years of consideration by the state pharmaceutical association.

Furthermore, this consideration of proposed legislation should not consist of its perfunctory reference to a special committee and an equally perfunctory approval of the committee's report, but of a thorough-going analysis of each section and provision by the whole association until the meaning and ultimate bearing of every clause and phrase have been developed so far as it is humanly possible to

foresee them. It would be a brief and trifling measure indeed that would not be worthy of an afternoon's discussion, and if it is one of any considerable length or complexity it is probable that the entire time of an annual meeting would not be too much for its adequate consideration.

It is no part of this plan to rush these model bills to the legislatures for immediate enactment. The prime object is to provide a series of carefully thought out, well-balanced, and accurately drafted measures to be made use of only when there is a real need of new legislation, or when it is necessary to quickly find a substitute for the crude and sloppy attempt of some crank reformer.

The Proper Education of Public Opinion.—Another essential in the campaign against useless legislation is the better education of the general public as to what constitutes necessary and proper regulation of the sale of drugs and medicines.

Every one owes it to his calling to protect its good reputation as zealously as he would protect his own. Every individual druggist, and every association should enter prompt protest through the press of their community against every extravagant tale of the sensation monger which reflects unjustly upon the drug business.

The American public is a fair-minded jury, but like every other jury it must base its conclusions upon the evidence and arguments which are brought to its attention. If we do not deny or protest against the sensational stories of the druggist's faults and crimes, we have no right to reproach the jury for accepting the alleged facts as true.

Not only is the general public disposed to be fair to the druggist, but it is already beginning to suspect that it has been victimized by the office-seeking patriot with his talk of wholesale adulteration of foods and drugs, and the reckless selling of narcotics and of dangerous and fraudulent medicines, and it is more than ever ready to listen to what the druggist has to say in his own defense.

The gods help those who help themselves.

REPORT OF COMMITTEE ON DRUG MARKET, PENNSYLVANIA PHARMACEUTICAL ASSOCIATION.*

(1914-1915.)

The report of your Committee on Drug Market is given under world conditions which have created effects never before experienced in the drug trade. Dependent as we are upon Europe for many of our crude drugs and fine chemicals, a conflict such as is now raging there has great effect upon the drug trade in this country. Although we have recovered somewhat from the semi-panic and disorganized condition existing during the first few weeks after the outbreak of the war, there is still an inevitable shortage of some drugs, due in part to the severance of the means of communication and transit with those countries which have supplied us with them; the enlistment of men in the various armies and the use of many products in large quantities by the fighting forces of the nations at war.

* Presented to Pennsylvania Pharmaceutical Association, June, 1915.

Before the British Order in Council of last March went into effect it was not so very difficult to obtain supplies from Germany or Austria, but conditions since the order became operative have become more serious and are steadily becoming worse. Goods that were ordered before the British order went into effect were permitted to be shipped after that date, but considerable delay was usually experienced, sometimes extending over three or four months, on account of the requirement that contracts, invoices, etc., be submitted to the British Government for inspection. Cases are known where so much time has been lost on account of the negotiations that the foreign shipper in a neutral port has been compelled to return the goods to the original shipper rather than submit to the continued loss of interest on the money invested. The situation is also complicated on account of the fact that certain steamship lines trading between the United States and Holland usually refuse to carry goods of German origin. Their reason for doing so is to protect their vessels from delay or seizure by the blockading fleet.

A new development is seen in the fact that the drug centers of Europe have been shifted from Hamburg and Trieste to Rotterdam and until recently to Genoa. Marseilles is shipping more than the usual amount. New York has also benefited, as South American goods that were formerly obtained through Hamburg brokers are now shipped direct to New York and from there distributed throughout this country and those countries of Europe that can be reached. Since Italy's participation in the conflict it is practically impossible to obtain goods from Trieste.

However, in spite of existing conditions, it is a remarkable fact that there has not been much lowering of quality nor more than the normal amount of adulteration. Some errors have naturally occurred on account of the advent of brokers in neutral European countries into the drug trade who knew practically nothing about the goods they were handling; for instance, one broker who before the beginning of hostilities was engaged solely in the non-medicinal seed business wanted to know what a pharmacopœia was and to send him one.

Some of the goods examined owe their inferior quality to improper gathering, some on account of having been placed in dirty packages, some others on account of the depletion of the regular stocks and others on account of accidental admixture with small amounts of foreign substances. Instances of seeming inferiority are also due to confusion of standards as established by various manufacturers. A condition worthy of notice is demonstrated by the fact that drugs found adulterated last year were found to be authentic and of standard quality this year, showing the value of publicity and education.

An improvement has been noticed in the quality of some substances usually found inferior; for instance, it is now possible to obtain mineral oil that is tasteless, odorless, free from fluorescence and color and equal to the Russian variety. It is true that it is lower in specific gravity, but it is claimed by the refiners that a low specific gravity does not necessarily indicate a thin mineral oil.

Summing up the situation in the drug market at the present time, we have found that the quality of the goods on the market is equal to that existing last

year. Of the hundreds of samples examined there were only five cases of adulteration or substitution and only two or three instances of goods of grossly inferior quality. There is quite a scarcity of goods, such as antipyrine, carbolic acid, salicylic acid, sodium salicylate, salol, phenacetin, etc. The great demand for ipecac occasioned by the use of emetine as a remedy for pyorrhea alveolaris and the low price of menthol are also noteworthy.

Following its usual custom the committee has taken advantage of the generosity of the firms of H. K. Mulford & Co. and the Smith, Kline & French Co., and have taken the following data from their analytic files. The matter presented at this time does not of course represent all the substances examined by these firms, but are typical of those articles examined during the periods extending from May 31, 1914, to June 1, 1915.

Preceding the comments on the goods examined during the past year we present the following observations, contributed by Mr. C. E. Vanderkleed, the Chairman of our Committee, in regard to the labeling of U. S. P. substances:

The presence of qualifying words and phrases other than the letters "U. S. P." on U. S. P. substances and the absence of "U. S. P." on strictly U. S. P. substances is very common. It is difficult to fathom the reason for leaving off the letters "U. S. P." from the label of a U. S. P. substance when the substance is strictly U. S. P. since the statement that the substance is "U. S. P." adds distinction to the quality of the substance. Some of the qualifying words and phrases noted were:

"Formaldehyde U. S. P.—Methyl alcohol and water 62.7%—Formaldehyde 37.3%." In this case an ingredient, methyl alcohol, is stated which is not mentioned in the U. S. P., although of course it is commonly understood to be present to some extent.

"Formaldehyde U. S. P.—Methyl alcohol 62.7%—Formaldehyde 37.3%." This is intended to be the same as the above but the labeler accidently omitted the statement "and water."

"Iodine, Crude, Com'l." was strictly U. S. P. except that it was in lumps instead of plates.

"Calomel, White" was strictly U. S. P.

"Manganese Dioxide, Heavy" was strictly U. S. P.

"Acetic Acid 36%." Evidently "U. S. P." was intended to be the information conveyed by "36%." However, an acetic acid may be 36% without being U. S. P., but not U. S. P. without being at least 36%.

"Acid Acetic, U. S. P. 99%" was the label on a lot of Galacial Acetic Acid U. S. P.

"Ox-gall" without any modifying statement was used on a package of powdered ox-gall.

"Oil Sassafras, True," was strictly U. S. P.

"Caffeine Alkaloid" a common method of labeling caffeine U. S. P.

"Oil Rosemary, for Technical Use" was below U. S. P. requirements in total borneol content.

"Arsenous Acid, Pure" was strictly U. S. P.

"Acetic Ether, 90%" was strictly U. S. P.

"Oil Fennel Seed, Sweet," was strictly U. S. P.

"Colchicine Pure, Cryst." contained about 22% chloroform of crystallization.

"Colchicine, Amorphous" was practically U. S. P. in quality.

"Oil Lavender, English and French Blended, U. S. P." was strictly U. S. P.

"Oxalic Acid, for Tech. Use" contained 0.156% non-vol. residue, was a trifle dirty but otherwise U. S. P.

"Indigo-Disulpho-Acid, not to be used in food products," contained a trace of heavy metals.

"Saccharin, Insoluble," required 500 parts instead of the 250 parts of water required by the U. S. P. for solution. It was otherwise strictly U. S. P.

"Ozone Vanillin" was strictly U. S. P.

"Petrolatum U. S. P. Extra Amber" was strictly U. S. P.

"Petrolatum U. S. P. Lily Ambers" was strictly U. S. P.

"Glycerin Pure" gave faint opalescence in test for sulphate, contained a trace of butyric acid but was otherwise U. S. P.

"Chloroform for Anaesthesia. Contains about ¾% alcohol." Was strictly U. S. P.

"Citric Acid, U. S. P., Dried and Powd.," was U. S. P. citric acid powdered but not dried.

"Tartaric Acid, Dried and Powd., U. S. P.," was strictly U. S. P. The "dried" in the name is superfluous.

Acetone.—Of the ten lots examined, only three complied with all the U. S. P. requirements. Three samples had slightly higher boiling points and were slightly lower in strength, two other samples were low only in strength and two had high boiling points. The strength of the various lots ranged from 98.5% to 99.66%, and the boiling points from 56° C. to 59° C. Reported by J. G. Roberts.

Acid Acetic.—All of the samples examined were of good quality. Reported by J. G. Roberts.

Acid Cresylic.—One sample of 98% to 99% strength had a pronounced objectionable tarry odor. Reported by J. G. Roberts.

Acid Oleic.—The improvement noted in the 1914 report still continues as the four lots examined were all of U. S. P. quality. Reported by J. G. Roberts.

Acid Salicylic.—An examination of eight lots demonstrates the wisdom of raising the present U. S. P. melting point standard from 156° to 157° C. to 156° to 159° C. as proposed for the U. S. P. IX. Only three lots complied with the present requirement of 156° to 157° C. Three of the others melted at 158° C. and two at 159° C. All the samples were satisfactory in every other respect. Reported by J. G. Roberts.

Acid Sulphuric.—Two lots examined were found to contain 94.3% and 92.6%, respectively, of absolute H_2SO_4. Reported by J. G. Roberts.

Acid Trichloracetic.—None of the lots examined gave a faint reddish color with $FeCl_3$ as required by U. S. P., but even reagent acids refuse to conform to this test. Reported by G. E'We,

Aconite Root.—An improvement was noted in the quality of Aconite as all samples examined complied with the U. S. P. requirement of not less than 0.5% aconitine. The following results were obtained on four lots: 0.505%, 0.5%, 0.63% and 0.64%. Reported by J. G. Roberts.

Alcohol.—The only lot examined failed to answer the U. S. P. aldehyde-oak tannin test. This is not an unusual condition, however, as all of the samples examined during recent years have contained traces of these impurities. Reported by J. G. Roberts.

Alkanet Root.—An examination of an average of four samples revealed the fact that it contained only 4.55% of anchusin. The British Pharmaceutical Codex states that Alkanet Root should contain not less than 5%. The samples were unsatisfactory in appearance on account of the presence of an undue proportion of leaf bases which were attached to the upper portion of the root and which are claimed to contain no coloring matter. As alkanet root is mostly used as a coloring agent it can be readily seen that an undue proportion of leaf bases is undesirable. Reported by J. G. Roberts.

Aloes.—No improvement has been noted in the quality of Socotrine Aloes, as four lots examined were in a poor physical condition and failed to comply with several U. S. P. requirements. They contained excessive moisture and an abnormal amount of alcohol insoluble material. The moisture ranged from 15.0% to 23.4%. It was found also that the yield of ash from samples taken from various kegs was quite varied as the following results demonstrate: 4.4%, 4.5%, 5.2%, 4.67%, 4.71%, 12.2%, 4.95%, 13.52% and 30.3%. There was quite a difference in the physical condition of the contents of kegs comprising the various shipments. Some kegs were full of soft semi-fluid aloes of uniform quality, while others were only partially full and contained a mixture of hard and soft aloes. The latter

kegs were probably from an older lot as the aloes were quite hard at the top and sides and soft to within about three inches of the top. An illustration of the variable character of the contents of various kegs is shown by the fact that a sample from the driest keg contained 15% moisture and a sample from the softest contained 23.4%. Reported by J. G. Roberts.

Alum, Dried and Powdered.—Great improvement in moisture content has been noted, none of the samples containing more than 6%, which is close to our arbitrary standard of 5% moisture. Reported by J. C. McCaffrey.

Anise Seed.—About 1% of coriander seed was found in one lot and was probably present as the result of accidental admixture. Reported by J. G. Roberts.

Asafetida.—Two lots were up to the 50% soluble in alcohol requirement, running 61.9% and 59.0%, respectively. The ash contents were 13.1% and 22.5%, respectively. Reported by W. H. Orrick.

Barium Peroxide.—An examination of seven lots gave strength results ranging from 87.12% to 89.4%. Reported by J. G. Roberts.

Belladonna Leaves.—Quite a variation was found in the alkaloidal content of 23 samples examined during the past year as the results obtained ranged from 0.199% to 0.587% of mydriatic alkaloids. Most of the samples were of U. S. P. quality as only four yielded results below the U. S. P. standards of 0.3%. One sample examined was in a poor physical condition as it was found to contain about 50% of stems. The remainder was composed of buds and stems and badly broken and ground leaves. Two instances of substitution were encountered as one sample was composed wholly of phytolacca leaves and one lot of a mixture of belladonna leaves and scopola leaves. Of the twelve bales composing this lot two were practically all scopola leaves, five contained not less than 25%, four not less than 50% and one not less than 75%. Reported by J. G. Roberts.

Belladonna Root.—Three lots contained 0.46%, 0.522% and 0.48%, respectively, of mydriatic alkaloids. Reported by J. G. Roberts.

Benzoin.—The five lots tested ranged between 67.8% and 76.5% in alcohol solubility, and 0.96% and 1.62% in ash. Reported by G. E'We.

Betanaphthol.—Both of the samples examined were not sufficiently soluble in alcohol, one of them also contained a slightly abnormal amount of organic impurities. Reported by J. G. Roberts.

Bismuth.—The only lot examined contained minute traces of arsenic and iron. Reported by J. G. Roberts.

Burdock Root.—One of the two lots examined was grossly inferior. It was wormy, rotten and dirty and was considered a very undesirable article. Reported by J. G. Roberts.

Calcium Carbonate Precipitated.—Usually gives slight precipitate in test for "limit of iron, aluminum and phosphates." Reported by J. C. McCaffrey.

Calcium Chloride.—One lot left 1.4% residue in U. S. P. test for Magnesium and alkalies, while the U. S. P. allows only 0.1%. Reported by J. C. McCaffrey.

Calcium Glycerophosphate.—The following results were obtained on three samples of different makes when tested according to the methods proposed for the U. S. P. IX:

Sample Number	1	2	3
Proportion soluble in water	1 gm. in 50 cc.	1 gm. in 50 cc.	1 gm. in 50 cc.
Reaction of aqueous solution to litmus	Acid	Alkaline	Acid
Phosphates	None	None	None
Heavy Metals	None	None	None
Sulphates	None	None	None
Chlorides	Normal	Normal	Normal
Alcohol soluble impurities	4.19%	0.67%	7.27%
Moisture at 130° C	10.70%	7.32%	9.17%
Residue upon ignition	49.40%	55.82%	47.43%
Strength	81.68%	92.29%	78.42%

Sample No. 2 was the only one that met the requirements as it was above 90% strength and was alkaline in reaction. It contained some alcohol soluble impurities, but it was considered that the slight amount present was unobjectionable. Reported by J. G. Roberts.

Calcium Phosphate.—One lot contained chlorides in excess of U. S. P. allowance. Reported by G. E'We.

Cannabis Americana.—An examination of one sample showed it to be in poor physical condition and almost physiologically inert. A separation of seeds from three other samples revealed the presence of 1.47%, 4.22% and 13%. Reported by J. G. Roberts.

Chromium Sulphate.—The two lots examined assayed 85.4% and 87.1% $Cr_2(SO_4)_3$, respectively. Reported by G. E'We.

Colchicine.—Colchicine continues to contain excessive quantities of chloroform and moisture. The thirteen lots examined lost 2.2%, 4.2%, 8.3%, 9.1%, 9.3%, 10.3%, 12.1%, 12.7%, 12.9%, 22.3% and 29.2% of their weight at 102° C. the loss in each case, with the exception of the 4.2% figure, being due chiefly to chloroform. The lot losing 4.2% lost only moisture. There is probably no excuse for the excessive quantities of chloroform left in this alkaloid, as it is readily driven off on heating without appreciably affecting the color of the alkaloid. It is difficult to obtain a good qualitative reaction with the U. S. P. Hydrochloric Acid-Ferric Chloride-chloroform test if the mixture is heated only to boiling, as required by the U. S. P., but if the boiling is continued for one to two minutes guarding against excessive evaporation a good reaction is always obtained. Reported by G. E'We.

Colchicum Seed.—0.82% Colchicine was found in the only lot examined. Reported by J. G. Roberts.

Cresol.—One lot examined was of U. S. P. quality in every respect. This is an uncommon condition as the specific gravity is usually abnormal. The specific gravity of five other lots ranged from 1.029 to 1.045; two of these had too high a boiling point as only 32% and 64% of distillate was obtained between 195° and 205° C. Reported by J. G. Roberts.

Only two of the sixteen lots examined had a specific gravity within the U. S. P. limits of 1.036-1.038, these two having specific gravities of 1.037 and 1.038, respectively. One of the others had a specific gravity of 1.039, one had specific gravity of 1.016 and the other twelve ranged between 1.030 and 1.033. All of the samples answered the U. S. P. requirement of 90%, distilling between 195-205° C. except one of which only 86% distilled. It is almost impossible to obtain cresol soluble in 60 parts water, but as a rule the insoluble portion is very small in amount. All other U. S. P. requirements were complied with by the samples. Reported by G. E'We.

Cubeb Stems.—An experimental determination produced about 5% of oil by steam distillation. Reported by J. G. Roberts.

Dandelion Root.—No chicory or any other adulterant was found in five lots examined. Reported by J. G. Roberts.

Digitalis.—The physiological activity of three lots was satisfactory. Reported by J. G. Roberts.

Dragon's Blood.—A comparison of the coloring power of one sample with a control sample showed it to be only about ⅓ as valuable. Reported by J. G. Roberts.

Elm Bark.—Considerable of the brownish outer bark was found in one rejected sample. Reported by J. G. Roberts.

Ether.—An examination of two samples of ether gave the following results:

Sample Number	1	2
Physical appearance	Normal	Normal
Specific gravity @ 25° C.	.7149	0.7145
Residue from 25 cc.	.0004 gm.	.0004 gm.
Boiling point	35° C.	35.5° C.
U. S. P. excess of alcohol and water test	Normal (19.75 cc.)	Normal (19.65 cc.)

Neither of these samples complied with all the requirements of the U. S. P., as they contained aldehyde and an excess of acid. One sample also left a foreign odor when evaporated from filter paper.

Both samples complied with the U. S. P. boiling point requirement and the test to determine the presence of an undue amount of alcohol or water. They each had lower specific gravities than that specified in the U. S. P., but that is a desirable quality as it indicates a strength a little above that required by the U. S. P.

The U. S. P. states that moistened blue litmus paper should not be reddened when immersed in ether for 10 minutes and also that no color should develop when 10 cc. of ether is occasionally shaken during one hour with 1 cc. of potassium hydroxide test solution. Upon applying these tests to the sample it was found that an excess of acid was present in each of them as one sample reddened the paper in 1 minute and the other in ½ minute. The presence of aldehyde was proven when both samples imparted a yellow color to the potassium hydroxide solution. Reported by J. G. Roberts.

Flour (Wheat).—Gluten ranging from 11.5% to 14.5% was found in 29 lots examined. Moisture determination on five lots yielded results ranging from 9.95% to 12.8%. Reported by J. G. Roberts.

Formaldehyde.—All the formaldehyde examined exceeded in specific gravity the U. S. P. requirement of 1.075-1.081, averaging between 1.082 and 1.087; most of them gave reactions for chloride, sulphate and calcium in the U. S. P. tests for same, but were otherwise U. S. P. Reported by T. Liberati.

Glycerin.—Two lots were rejected on account of color and their undesirable dirty appearance. Reported by J. G. Roberts.

Guaiac.—Alcohol solubility ranged between 77.5 and 99.2%, only one being below U. S. P. standard of 85% soluble. Ash ranged between 0.51 and 5.70%, only one being above U. S. P. standard of 4%. Reported by G. E'We.

Hellebore.—1.21% of total alkaloids was found in a seventeen-bale lot. Reported by J. G. Roberts.

Hydrastis.—Each of the seven lots examined was found to comply with the U. S. P. standard of not less than 2.5% hydrastine and were found to contain the following amounts: 3.18%, 3.82%, 3.61%, 3.12%, 2.78%, 2.94% and 2.79%. Reported by J. G. Roberts.

Hydrogen Peroxide.—The twenty-three lots examined were satisfactory with the exception that two gave total solids of 0.0479 gm. and 0.0340 gm. per 20 cc. sample, in which test the U. S. P. requires not more than 0.030 gm. Reported by N. Saito.

Hyoscyamus Leaves.—Only one of the nine lots examined complies with the U. S. P. mydriatic alkaloids requirement. The other samples contained 0.04% to 0.06% of mydriatic alkaloids. Reported by J. G. Roberts.

Ipecac Root.—Results ranging from 1.83% to 2.06% of alkaloids were obtained in the examination of five shipments. Reported by J. G. Roberts.

Iron (Ferrous) Sulphate, Dried and Powd.—Continues to vary greatly in $2\,FeSO_4+3\,H_2O$ content. The fifteen lots tested ran as follows: 80.0, 83.1, 88.5, 91.3, 91.9, 92.3, 92.6, 93.4, 93.4, 95.2, 96.0, 96.0, 99.0, 103.0 and 104.8 percent. Reported by W. H. Orrick.

Kamala.—Adulteration was indicated when three samples yielded 53.5%, 49.1% and 56.9%, respectively, of ash. It is said that red sand is often added to such an extent that an ash yield of 40% to 60% has been obtained. Foreign pharmacopœias place the ash limit between 6% to 10%. Reported by J. G. Roberts.

Keiselguhr.—Much of the Keiselguhr offered for pharmaceutical purposes contains organic matter, from which this product should be freed by ignition. Reported by G. E'We.

Laundry Blue.—Several lots were not sufficiently soluble in water and gave a reddish tint to the aqueous solution. One lot was found to contain 0.7% of water insoluble material. Reported by J. G. Roberts.

Licorice Root.—12.27% of glycyrrhizin was found in one sample. One authority places the standard at six to eight percent. The residue upon ignition was 6.59%. Reported by J. G. Roberts.

Lupulin.—The ten lots examined showed:

Soluble in Ether	Ash
55.5%	8.23%
55.0%	7.72%
57.1%	7.60%
58.6%	10.70%
54.7%	19.40%
67.6%	13.30%
55.3%	18.30%
44.2%	28.40%
69.2%	12.80%
68.2%	14.40%

The U. S. P. requires 60% soluble and not more than 10% ash. Reported by L. H. Glickman.

Magnesium Carbonate.—Two of the six lots examined were low in MgO after ignition, these two assaying 92.6%, and 94.8%, respectively. Five of the six lots contained calcium in excess of the U. S. P. limits. The six lots were otherwise U. S. P. Reported by G. E'We.

Magnesium Oxide.—One lot contained only 93.9% MgO after ignition, U. S. P. requiring 96%. None of the lots examined during the past year gelatinized with water as required by the U. S. P. and most of them contained calcium in excess of the U. S. P. limits. Reported by G. E'We.

Magnesium Sulphate, Dried and Powd.—The usual variation in water-content was noted during the past year. The five lots examined contained 14.9%, 26.9%, 27.7%, 29.8% and 31.5%, respectively. Reported by L. H. Glickman.

Manaca Root.—During a recent examination of Manaca Root it was found that information concerning it is rather meager, so that it became necessary to base our results upon a comparison made with a sample that was declared to be genuine Manaca Root. During the examination of the literature on the subject it was found that some authorities claim that there is a red and a white manaca. The Red Manaca is given the most prominence and is the only variety described. The White Manaca is merely mentioned and no description whatever is available concerning it.

The samples submitted for examination were in large pieces about 18 inches long, knotted at one end and tapering from about 3 inches at the knotted end to about one-half inch at the small end which, however, had been cut. They had a yellowish-red color, a pronounced and distinctive odor and were covered with a thin, easily removed flaky scale. They were rather tough and broke with a fibrous uneven fracture. The bark was relatively thick and could be peeled with little difficulty. The authentic sample had a reddish-brown color and a similar but not as strong an odor. It differed also from the other sample in the fact that it is hard and has a thin, tenacious bark and breaks with an uneven fracture.

A microscopical examination revealed important differences in both the transverse and tangential sections. In transverse sections the medullary rays of the authentic sample are only one cell wide, while they were one to four cells wide in the trial sample. The pitted ducts are also slightly smaller in the authentic than in the trial sample. In tangential sections the medullary rays are few in the authentic sample and quite numerous in the trial sample. Starch grains are present in the medullary rays of both samples. In both the transverse and tangential sections the cork layer is much wider in the trial than in the authentic sample.

In accordance with the results obtained in the foregoing examination it was considered that the sample submitted for examination was not true Manaca but a closely-related species. Reported by J. G. Roberts.

Manganese Dioxide.—A sample of poor quality was examined which was only 65.66% pure (U. S. P. 80%), and which contained 17.13% of antimony sulphide and insoluble substances. Reported by J. G. Roberts.

One lot contained some insoluble residue in test for "antimony sulphide and insoluble substances," but was otherwise U. S. P. Reported by J. C. McCaffrey.

Manganese Sulphate.—Continues to vary greatly in water content. The seven lots examined contained 29.4%, 31.7%, 32.3%, 32.5%, 35.9%, 37.3% and 37.4%, respectively, four being above the U. S. P. limit of 32.3%. These figures for moisture were obtained by employing the lowest possible red heat on the manganese sulphate in a porcelain crucible. The U. S. P. directs that the salt be "gently ignited." Different loss in weight of the salt is occasioned at different degrees of ignition. Reported by G. E'We.

Milk (Dried).—One lot which contained only 0.56% fat was probably made from skimmed milk. Reported by J. G. Roberts.

Mustard (Yellow).—An examination of one ground sample yielded the following results: Ash 5.88%, ether extract volatile at 110° C. 0.1%, ether extract non-volatile at 110° C. 14.53%, moisture 6.33%, turmeric or charlock none. Reported by J. G. Roberts.

Oil of Anise.—Two lots which complied with all the U. S. P. requirements contained traces of lead. Reported by J. G. Roberts.

Oil Anise, Chinese.—Two samples were nil in optical rotation but answered all the other requirements for Oil Anise, U. S. P. The U. S. P. requires a laevogyrate rotation. Reported by G. E'We.

Oil of Cod Liver.—The saponification numbers of various samples ranged from 186.07 to 190, and the iodine numbers ranged from 151.44 to 162.9. Not one of the eight lots examined complied with the U. S. P. saponification value requirement of 175 to 188 and iodine value requirement of 140 to 150, but were all within the limit proposed for U. S. P. IX. Reported by J. G. Roberts.

Oil Lemon.—The six lots examined tested 3.52%, 3.56%, 3.63%, 4.08%, 4.18% and 4.32% citral by the method of J. C. Umney in Perfumes and Essential Oil Record, 1913, 4, 269. Reported by T. Liberati.

Oil Lemon, Extra Strong.—There is no declared citral content on this product and it varies accordingly. The two lots examined assayed 12.55% and 21.5% citral by method of J. C. Umney. Reported by T. Liberati.

Oil of Neatsfoot.—The rejection of one lot was recommended on account of its high specific gravity and iodine value. Lewkowitsch quotes specific gravities of pure oils ranging from 0.914 to 0.917 at 15° C. and iodine values from 66 to 71. The rejected sample had a specific gravity of 0.9227 and an iodine value of 91.9. It also had a higher congealing point than is usually found for Neatsfoot Oil as other samples examined ranged from 22° F. to 42° F. This sample congealed at 50° F. Reported by J. G. Roberts.

Oil Wormseed.—One lot was adulterated with 44% of a fixed oil. Oil Wormseed ordinarily averages 1.5% non-volatile residue. Reported by G. E'We.

Oxgall, Powd.—None of the Powd. Oxgall examined this past year contained starch; a decided improvement in this product. Reported by W. H. Orrick.

Petrolatum (Liquid)—Owing to the shortage of supply from European sources a fine grade of medicinal mineral oil of American origin has been placed on the market. It complies with the requirements of the U. S. P. with the exception of specific gravity, which has ranged from about 0.835 to 0.853. Reported by J. G. Roberts.

The Russian variety being practically unobtainable, resource must be had to oil from other sources. These oils are difficult to obtain free from kerosene taste and fluorescence and are much lower in specific gravity than desirable. Reported by G. E'We.

Quinine Alkaloid.—Extreme variation in water content of this alkaloid is still noted. The nine lots examined contained 0.0, 7.3, 9.3, 11.3, 12.5, 12.7, 13.0, 15.1 and 20.0 percent water, respectively. The U. S. P. allows 14.3 percent. Reported by N. Saito.

Resin Jalap.—One lot was not completely soluble in five times its weight of ammonia water. Reported by W. H. Orrick.

Resin Scammony.—Sample did not comply with the U. S. P. ether and turpentine solubility requirements and did not give satisfactory results with the sulphuric acid identity test. According to the U. S. P., Resin Scammony should be completely soluble in turpentine and almost completely soluble in ether. We have never examined a sample that was wholly soluble in turpentine but have had several that were almost completely soluble in ether.

The ether solubility test is a strong indication of the purity of Resin Scammony as the spurious varieties are not nearly so soluble as the genuine U. S. P. variety which is not less than 95% soluble in ether. As the sample submitted for examination yielded only 68.2% of ether soluble material it was considered to have been obtained from one of the spurious varieties. Reported by J. G. Roberts.

Sanguinaria.—The following amounts of alkaloid were obtained from the four lots examined: 2.88%, 4.09%, 4.7%, 2.86%. Reported by J. G. Roberts.

Sodium Benzoate.—A twenty-barrel lot of generally inferior quality was rejected. It had a yellowish color and an undesirable odor. It also contained 4.9% of chloride computed as Sodium Chloride and was only 88% pure. Reported by J. G. Roberts.

Sodium Glycerophosphate (75% Solution).—The following results were obtained on two samples:

	No. 1	No. 2
Reaction of 1-20 solution	Very alkaline	Alkaline
Heavy Metals	None	None
Phosphates	None	None
Alcohol soluble impurities	0.14%	0.17%
Strength as anhydrous Sodium Glycerophosphate	53.63%	59.97%

Neither of the samples comply with the proposed standard of not less than 66%. It is possible, however, that the manufacturers do not calculate on the anhydrous basis as Sodium Glycerophosphate containing 5½ molecules of water is manufactured. Calculating upon this basis, sample No. 1 would be increased to 78.23%, and sample No. 2 to 87.46%. Reported by J. G. Roberts.

Sodium Iodide.—One lot assayed 95.2% absolute NaI; the low assay being due to moisture. Reported by G. E'We.

Sodium Salicylate.—A 500 lb. lot was rejected on account of being 4% low in strength. Several samples also contained traces of heavy metals, according to the U. S. P. test. Reported by J. G. Roberts.

Two lots were lower than the 99.5% standard, assaying 97.2 and 98.4%, respectively. Reported by L. H. Glickman.

Sodium Sulphite.—The only lot examined was 2.44% low in strength. It also was dark in color and was too alkaline in reaction. Reported by J. G. Roberts.

Spigelia.—An improvement is noted in the quality of Spigelia, as one lot contained only a few foreign roots. The other two lots contained only about one and two percent, respectively, of Ruellia. Reported by J. G. Roberts.

Stramonium Leaves.—Sixteen lots were examined, fourteen of which were of U. S. P. strength. The others contained 0.19% and 0.23%, respectively, of mydriatic alkaloids. Reported by J. G. Roberts.

Stramonium Seed.—Both lots were slightly below standard and yielded 0.28% and 0.29% of mydriatic alkaloids. Reported by J. G. Roberts.

Strontium Peroxide.—One lot assayed only 69.2% absolute SrO_2, which is below the 84.5% stated by the N. & N. R. for a good product. Reported by N. Saito.

Terra Alba.—The trade still differs as to what the composition of Terra Alba should be. Most of the lots examined were Calcium Sulphate, but one lot was clay, another lot was clay with much calcium sulphate and another lot was clay with a little calcium sulphate. Reported by G. E'We.

Thyroid Glands (Powdered).—The following amounts of iodine were found in several lots examined: 0.029%, 0.0585%, 0.044%, 0.065%, 0.18% and 0.19%. It can be readily seen that the last two are the only lots that will meet the iodine standard of 0.17% to 0.23% proposed for the next U. S. P. Reported by J. G. Roberts.

Pinus Maritima.—A steam distillation of this substance yielded about 10% of an oil having

an optical rotation of —30° 31′ and a specific gravity of 0.868 at 25° C. Reported by J. G. Roberts.

Wild Cherry Bark.—About 50% of old reddish-brown undesirable bark was found in one lot. Reported by J. G. Roberts.

Zinc Oxide.—Three lots which complied with all the U. S. P. requirements contained 0.21%, 0.275% and 0.196% of lead calculated as lead oxide. Reported by J. G. Roberts.

The following table shows the results of 133 crude drug assays made in the Analytical Laboratory of the H. K. Mulford Co. during the year June 1, 1914, to June 1, 1915:

DRUG	No. of Samples	Lowest Assay	Highest Assay	Average	Standard	No. Above Standard	No. Below Standard
Aconite Leaves	1	0.355	0.355	0.355	0.2% ether soluble alkaloids	1	0
Aconite Root	5	0.360	0.625	0.497	0.5% ether soluble alkaloids	2	3
Belladonna Leaves	3	0.247	0.350	0.300	0.3% mydriatic alloids	2	1
Belladonna Root	7	0.424	0.640	0.511	0.45% mydriatic alloids	5	2
Cantharides, Chinese	6	0.570	1.10	0.869	0.6% cantharidin	5	1
Cantharides, Russian	1	0.625	0.625	0.625	0.6% cantharidin	1	0
Capsicum	6	13.85	20.84	16.65	10% oleoresin	6	0
Cinchona, Red	1	8.35	8.35	8.35	5% total anhydrous alkaloids	1	0
Cinchona, Yellow	10	6.50	11.00	8.56	5% total anhydrous alkaloids	10	0
Coca Leaves	1	1.053	1.053	1.053	0.5% ether soluble alkaloids	1	0
Colchicum Seed	3	0.660	0.850	0.780	0.45% colchicine	3	0
Digitalis	2	0.293	0.365	0.329	0.25% digitoxin	2	0
Ergot	6	0.115	0.380	0.256	0.15% cornutine	4	2
Gelsemium	4	0.503	0.849	0.630	0.4 alkaloids	4	0
Ginger, African	2	7.99	8.90	8.44	6% oleoresin	2	0
Ginger, Jamaica	1	3.93	3.93	3.93	4% oleoresin	0	1
Hydrastis	5	3.16	3.98	3.63	2.5% hydrastine	5	0
Hyoscyamus	20	0.031	0.140	0.073	0.08% mydriatic alkaloids	6	14
Ipecac, Powdered	3	1.666	2.130	1.872	1.75% alkaloids	2	1
Ipecac, Whole	6	1.846	2.380	2.221	1.75% alkaloids	6	0
Jalap	1	7.17	7.17	7.17	7% total resin	1	0
Kola Nut, Dried	10	1.40	2.02	1.582	1% alkaloids	10	0
Lobelia	1	0.591	0.591	0.591	0.5% alkaloids	1	0
Nux Vomica	7	0.705	1.328	1.013	1.25% strychnine	2	5
Opium Gum	9	11.31	12.35	11.74	9% cryst. morphine	9	0
Opium Powd.	6	11.84	12.58	12.11	12%-12.5% cryst. morphine	3	3
Pilocarpus	1	1.06	1.06	1.06	0.5% alkaloids	1	0
Quebracho	2	0.95	1.22	1.08	1% alkaloids	1	1
Sanguinaria	1	3.98	3.98	3.98	2.5% alkaloids	1	0
Stramonium Leaves	1	0.219	0.219	0.219	0.25% mydriatic alkaloids	0	1
Veratrum	1	1.32	1.32	1.32	1% alkaloids	1	0
Totals	133					98	35

Comparison with reports sent in previously:

Year	Total	Above	Below	Percent Above
1909	395	313	82	79.3
1910	340	291	49	85.6
1911	263	224	39	85.1
1912	298	235	63	78.8
1913	382	264	118	69.1
1914	286	221	65	77.2
1915	133	98	35	73.6

Last year the drugs running habitually below standard were Aconite Root, Calabar Bean, Hyoscyamus, Jalap, Mandrake and Nux Vomica.

This year Aconite Root, Hyoscyamus and Nux Vomica are running low.

The Smith, Kline and French Co. found that Hyoscyamus, Nux Vomica and Stramonium Seed were generally below standard.

Respectfully submitted,

COMMITTEE ON DRUG MARKET,
J. G. ROBERTS, Acting Chairman,
CHAS. E. VANDERKLEED,
HENRY C. BLAIR,
D. M. KRAUSER.

SUGGESTIONS FOR A COURSE IN MICRO-ANALYSIS AND BACTERIOLOGY FOR COLLEGES OF PHARMACY.

ALBERT SCHNEIDER.

(Concluded from July.)

The following blank report sheets should be used. The sample reports given will indicate how these are to be filled out based upon the results of the analysis:

Form No. 1. Blank report sheet for the microscopical examination of organic drugs and dry food substances.

No. (I. S. Laboratory or other serial number).

Label .....

.....

Sample received.....Sample examined.....

Conditions of wrappings and seals.....

Organoleptic tests .....

Consistency of Feel.....

Color .....

Odor .....

Taste .....

Adjunct Tests .....

Ash .....%

Acid-insoluble .....%

Sand (beaker test).....%

Special Tests .....

.....

.....

Microscopical Findings .....

.....

.....

.....

.....

Conclusions .....
.....
.....
.....
.....
.....Analyst.

The following is a sample report of analysis using the proposed report card:

No.: 5432.

Label: *Broken Senna, U. S. P., John Smith & Co., Kalamazoo, Michigan.*

Sample received: *August* 15, 1912. Sample examined: *August* 20, 1912.

Conditions of wrappings and seals: *Good.*

Organoleptic Tests .....
- Consistency or Feel: *Dry, gritty, sandy, dirty.*
- Color: *Not unusual.*
- Odor: *Senna-like.*
- Taste: *Sandy, gritty.*

Adjunct Tests .....
- Ash: 19.6%.
- Acid-insoluble: 9.4%.
- Sand (beaker test): 9%, *sand and small pebbles.*

Special Tests: *Pebbles picked out by hand. About 4% senna seeds and pod fragments and stems present.*

Microscopical Findings: *The histological characters of African senna. Stem tissue excessive. Sand and dirt excessive. Senna seeds and pods present in considerable quantity.*

Conclusions: *Adulterated with sand, pebbles, senna seeds, senna pods and stems 25%. Misbranded because labeled U. S. P., whereas it is below the U. S. P. standard.*

RICHARD ROE, Analyst.

Form No. 11. Blank report sheet for the microscopical examination of catsups, jams, jellies, etc.:

(No., label, dates, condition of seal and organoleptic tests, as for Form No. 1.)

Adjunct Tests.
- Sublimation tests for.....
  - Benzoic acid .....
  - Salicylic acid .....
- Boric acid (curcuma thread).....
- Iodine reaction .....
  - Intracellular .....
  - Extracellular .....

Special Tests .....
.....

Microscopical Findings.
- General .....
.....
.....
- Cytometric counts.
  - Dead yeast cells.....per cc.
  - Living yeast cells.....per cc.
  - Bacteria .....per cc.
  - Mold (hyphal fragments and clusters).....per cc.
  - Mold spores .....per cc.

Conclusions .....
.....
.....
.....Analyst.

We may give an example of a report as follows:

FORM NO. II.

Lab. No. 462.
Label: *Pure currant jelly. Made by Smith, Jones & Co., Nantucket, Wis.*
Sample received *August* 5, 1914. Sample examined *August* 5, 1914.
Condition of seals: *Good, unbroken sample.*
Organoleptic tests: *Not conclusive.*
Consistency or feel: *Poorly jellied.*
Color: *Normal for Currant jelly.*
Odor: *Faint, somewhat disagreeable.*
Taste: *Not characteristic, bitterish, quite acid.*
Adjunct tests.
Sublimation tests for
Benzoic acid: *Negative.*
Salicylic acid: *Very marked.*
Boric acid (curcuma thread): *Negative.*
Iodine reaction: *Very marked.*
Intracellular: *Negative.*
Extracellular: *Positive, very marked.*
Special tests: *Salicylic acid color reaction, with ferric chloride very marked.*
Microscopical examination.
General. *Some apple tissue (window cells and pulp cells) and currant tissue sclerenchyma present. Added wheat starch about 5 percent.*
Cytometric counts.
Dead yeast cells, 80,000,000.....per cc.
Living yeast cells, *none*.....per cc.
Bacteria, 600,000,000 .....per cc.
Mold (hyphal fragments and clusters), 84,000.....per cc.
Mold spores, 5,000,000.....per cc.
Smut spores, *none*.....per cc.
Conclusions: *Misbranded. Adulterated with apple and with wheat starch and made from fermented and decomposed material, preserved with salicylic acid. Not fit for human consumption because of the quantity of yeast, mold and bacteria present.*

JOHN DOE, Analyst.

Part II. Bacteriological.—Quantitative and Qualitative Determinations of Organisms in Foods and Drugs.

A laboratory course of at least one hour each day extending throughout the entire college year. The time necessary to do the laboratory work will vary from day to day. The work is to be supplemented by lectures, special reading and seminar work. The laboratory methods employed are those of the Laboratory Section of the American Public Health Association, The U. S. Public Health Service and the Bureau of Chemistry of the U. S. Department of Agriculture, in-so-far as these methods are applicable.

I. Substances to be analyzed.
1. Liquids of all kinds.
2. Semiliquids and semisolids miscible with water.
3. Solids of all kinds.

II. Numerical and quantitative limits of contamination in different substances.
1. For molds—quantity of spores and hyphæ.
2. For yeasts—number and kind.
3. For bacteria—number and kind.
4. For pus, dirt, sand, etc.

III. Methods.
1. Making concentrations.
2. Making dilutions.
3. Making the counts and estimates.
   a. Bacteria.
   b. Yeasts.
   c. Mold spores and mold hyphæ.
   d. Algæ, in drinking waters, etc.
   e. Protozoa.
   f. Pus cells, in milk, etc.
   g. Dirt, sand, etc.
4. Plate counts—Petri dish cultures.
   a. Culture media used.
   b. Optimum temperature.
   c. Time of incubation.

IV. Qualitative determinations.
1. Apparatus.
2. Culture media.
3. Stains.
4. Special methods.
   a. Colon group of bacilli.
   b. Presumptive colon bacillus test.
   c. Sewage streptococci.
   d. Dysentery bacilli and amoebæ.
   e. Bacillus typhosus.
   f. Paratyphoid group.
   g. Cholera vibrio.
   h. Yeasts.
   i. Molds.
   j. Animal parasites.
   k. Larvæ, ovæ, etc.

V. Biological water analysis.
1. Bacteria, number and kind.
2. Diatoms.
3. Desmids.
4. Nostoc.
5. Other algæ.
6. Molds; significance of.
7. Evidence of soil and sewage contamination.

VI. Bacteriological milk analysis.
1. Quantitative.
   a. Standards for different geographic areas.
   b. Summer and winter standards—temperature standards.
2. Qualitative.
3. Pus and blood corpuscles; significance of.
4. Milk diseases.
   a. Blue milk.
   b. Ropy milk
   c. Bad odors, bad taste, etc.
5. Sour milk.
6. "Buttermilk" tablets.
7. Kefir, koumys, etc.

VII. Bacteriological Examination of Shellfish.
1. Selection of sample.
2. Making a record of the sample.
3. Transportation of the sample.
4. Laboratory procedure.
5. Bacterial counts.
6. Determining bacteria of the colon bacillus group.
7. Statement of results. Rating.

VIII. The Bacteriological and Toxicological Examination of Meat and Meat Products.
1. Direct microscopical examination of meats.
   a. Bacteria on the surface of meats.
   b. Mold and mold spores, as in moldy bacon, pork, fish, etc.
   c. Presence of bladder worm, larvæ of parasites, etc.
   d. Trichinæ in pork and examination for trichinæ.
   e. Cereal fillers and starches in sausage meats.
   f. Preservatives and coloring substances in meats.
2. Plate cultures.
   a. Numerical counts of bacteria.
   b. Number of gas formers and of acid formers.
   c. Bacillus botulinus in pork. Botulism.
3. Toxicological tests.
   a. Inoculation tests (Guinea pigs) to prove the absence or presence of toxins or ptomaines.
   b. Tests for tuberculous meats and for the tubercle bacillus.
4. Biological Tests. Determining the Source of the Meat.
   a. Sugar test for horse meat.
   b. The precipitin test for meats from different animals.
   c. Microscopical examination of tissues, fats, fat crystals, etc.

IX. The Bacteriological Examination of Eggs and Egg Products.
1. Direct microscopical examination.
   a. Bacteria.
   b. Molds.
   c. Mold spores.
2. Plating methods.
3. Egg tests.
   a. Candling.
   b. Brine test.
   c. Organoleptic tests, etc.
4. Evaporated eggs.
5. Cold storage eggs, etc.

X. Bacteriological Examination of Pharmaceutical Products.
1. Direct microscopical examination.
   a. Bacteria.
   b. Molds.
   c. Mold spores.
   e. Yeasts.
2. Plating methods.
3. Colon bacillus test.
4. Tetanus bacillus test.
5. Tests for the staphylococcus and streptococcus groups.

XI. The Microscopical and Bacteriological Examination of Syrups.
1. Medicinal syrups.
   a. Official, simple and medicated.
   b. Patent and proprietary medicated syrups.
   c. Medicinal preparations containing syrup.
2. Soda fountain syrups.
3. Fruit juices containing sugar. Fruit juice concentrates.
4. Syrups, molasses, treacle, corn syrup, etc.

XII. The Microscopical and Bacteriological Examination of Fermented Foods and Drinks.
1. Whisky and brandy.
2. Beer. Beer diseases.
3. Wines. Wine diseases.
4. Other fermented drinks.
   a. Sake or Japanese rice wine.
   b. Arrak.
   c. Yoghurt.
   d. Kephir.
   e. Koumiss.
   f. Soja sauce.
   g. Mazun.
   h. Leban.
   i. Ginger beer.
   j. Beebe wine.

XIII. The Bacteriological Examination of Mineral Waters.
1. Examination of centrifugalized sediments.
2. Plating methods.
3. Presumptive colon bacillus test.

XIV. Determining the Efficiency Value of Disinfectants.
1. Phenol germ destroying coefficient.
2. Toxic Coefficient.
3. Albumen coagulating coefficient.
4. Comparative cost.

XV. Determining the Purity and Quality of Sera, Bacterins and of Related Products.
1. Purity and freedom from bacteriological contamination.
2. The purity of smallpox vaccines.
3. Purity of bacterial vaccines.

XVI. Special Biological and Toxicological Tests.
1. Arsenic in foods. Biological test for arsenic.
2. Toxicity tests with defibrinated blood.
   a. Toxalbumins and toxins.
   b. Saponins.
   c. Chemical hemolysis.
3. Frog tests for the presence of alkaloids.

The following report blank will be found useful in making reports of bacteriological examinations. In many instances however, it will be found necessary to supplement the report or to make a special report.

FORM NO. III.

Bacteriological Examination.

(No., label, dates, condition of seals as for Form I.)

I. Direct count. (Thoma-Zeiss hemacytometer with Turck ruling.)
1. Bacilli per cc.....
2. Cocci per cc.....

II. Plate and tube cultures. (Lactose-litmus-agar.)
1. Temperature differential test.
a. (20° C.) colonies per cc.....
b. (38° C.) colonies per cc.....
2. Color differential test.
a. Pink or yellow colonies per cc.....
b. Not pink or yellow colonies per cc.....
3. Gelatine liquefying colonies per cc.....
4. Indol reaction (±).....
5. Neutral red reduction (±).....
6. Gas (hydrogen) formula.....
7. Gram-stain behavior (±).....
8. Presumptive colon bacillus test (±),
a. Amounts used .....
b. Number of tests.....
c. Rating .....
III. Special tests .....
.....
.....
IV. Conclusions .....
.....
.....
.....Analyst.

WHITE MINERAL OILS, AMERICAN—PARAFFINUM LIQUIDUM—LIQUID PETROLATUM.

S. L. HILTON.

White Mineral Oils, or Paraffinum Liquidum, U. S. P. now on the American market are of American refining, for the reason that the Russian oils are unobtainable owing to various causes incident to the European War. A fact, not generally known, was that while these oils were made from crude material obtained in the Baku district they were not refined there and the processes of refining are held secret.

The Russian crude product differs chemically from that found in America, consequently, it has been necessary to devise and develop new processes that were applicable to refining and purifying the crude American product so as to be able to furnish an oil of similar character as the Russian, for internal administration, that would give equally as good results in intestinal stasis.

The requirements of the British Pharmacopoeia are more exacting than required by the U. S. P. VIII. No doubt the U. S. P. IX, when issued, will be as exacting; the standard that I have followed in the examination of these oils is that of the British Pharmacopoeia.

An oil containing an appreciable amount of unsaturated hydrocarbons when taken internally will result in chemical action in the digestive tract, generating gases and having a similar action to that of castor or croton oils, which is not

desired. The work of Dr. Lane was with an oil free from unsaturated hydrocarbons, of a rather heavy specific gravity, so that its action would be mechanical entirely. This is the oil that is desired and the one that has been used abroad and in this country for some time. With the disappearance of the Russian oil from the market, it has become necessary for American refiners to study the question and devise processes to properly purify and refine the American crude product obtainable, of quite a different character, so as to furnish an oil of high purity, free from unsaturated hydrocarbons, that would take the place of the foreign product now unobtainable. This the American refiners seem to have accomplished and they will no doubt further improve their products, after gaining more experience with the processes they have devised for purifying and refining.

An examination of fifteen different samples of American oils now on the market shows varying results, those suitable for internal administration when subjected to a temperature of —4° C. for 4 hours are nearly or quite solid, some of them will show a distinct cloudiness with the slightest change of temperature. Another characteristic of the American oils is that they are generally of lighter specific gravity than the Russian oils, due evidently to the fact that they are obtained from material of a different chemical composition. The Russian oil is obtained from the crude product consisting chiefly of monocylic polymethanes or naphthenes having a general formula C_nH_{2n}. The American crude oil is obtained from paraffin base petroleums and consists chiefly of hydrocarbons of the methane series having the general formula of C_nH_{2n+2}.

Richter makes the statement that paraffins are more abundant in petroleum from the Baku district than that found in America; my observations are to the contrary. In a comparison of experiments I made in February 1914, with those made at this time, I find that the American oils show decidely more heavy paraffins than the Russian oils. I see no reason why this should affect the quality of the American oil or interfere in any way with its use for internal administration, provided they are saturated hydrocarbons. This can be readily determined by applying the sulphuric acid test; the showing of more than a pale brown color, after properly conducting the test as prescribed by the British Pharmacopœia, is sufficient grounds to reject the oil for internal administration.

After completing the examination as shown by the tabulated statement, I placed samples of the oils I considered best, in the hands of several physicians for experimentation and comparison of results they had previously obtained with Russian oils. In every case I have had most favorable reports and they have informed me that they were unable to notice any difference whatever in its action. I have therefore come to the conclusion that our American oils, when properly purified and refined, so that they are free from taste, odor and unsaturated hydrocarbons, that are water-white and with a specific gravity of at least .840 at 15° C., will answer every purpose that is desired and will give equally good results as the Russian oils when taken internally.

I herewith append tabulated statement showing the results obtained. Samples 1, 4, 5, 6, 7, 9, 10, 12, and 15 conform to the requirements of the British Pharmacopoeia, which standard is more rigid than that required by the U. S. P. VIII. These oils are adapted for internal administration.

EXAMINATION OF AMERICAN MINERAL OILS.

(Liquid Petrolatum.)

Sample	I	II	III	IV	V
Color	None	None	None	None	None
Odor	None	None	None	None	None
Taste	None	None	Decided petroleum	None	None
Acidity	Neutral	Neutral	Neutral	Neutral	Neutral
Sp. Gr. at 15 C.	.8436	.8553	.8603	.8561	.8424
Freezing Test	Very opaque solidified	Slightly opaque	Slightly opaque	Slightly opaque	Very opaque solidified
Heating on Platinum	Slight odor	Slight odor	Slight odor	Slight odor	Slight odor
Lead Oxide Test	Nil	Nil	Nil	Nil	Nil
Saponification Test	Nil	Nil	Nil	Nil	Nil
Sulphuric Acid Test	Pale brown	Brown	Dark brown oil colored	Pale brown	Very pale brown

Sample	VI	VII	VIII	IX	X
Color	None	None	Blue fluorescence	None	None
Odor	None	None	None	None	None
Taste	None	None	Decided petroleum	None	None
Acidity	Neutral	Neutral	Neutral	Neutral	Neutral
Sp. Gr. at 15 C.	.8542	.8555	.8647	.8435	.8516
Freezing Test	Opaque solidified	Opaque	Slightly opaque	Opaque solidified	Opaque solidified
Heating on Platinum	Slight odor	Slight odor	Petroleum odor, acrid	Slight petroleum odor	Slight petroleum odor
Lead Oxide Test	Nil	Nil	Nil	Nil	Nil
Saponification Test	Nil	Nil	Nil	Nil	Nil
Sulphuric Acid Test	Very pale brown	Pale brown	Very dark brown, oil layer violet	Pale brown, oil colored	Pale brown

Sample	XI	XII	XIII	XIV	XV
Color	Blue fluorescence	None	None	Blue fluorescence	None
Odor	Slight petroleum	None	Slight petroleum	None	None
Taste	Decided petroleum	None	Petroleum taste	None	None
Acidity	Neutral	Neutral	Neutral	Neutral	Neutral
Sp. Gr. at 15 C.	.8706	.8440	.8615	.8638	.8427
Freezing Test	Slightly opaque	Opaque solidified	Opaque partly solidified	Opaque partly solidified	Opaque partly solidified
Heaing on Platinum	Decided petroleum, acrid	Slight odor	Decided petroleum odor	Slight acrid odor	Slight odor
Lead Oxide Test	Nil	Nil	Nil	Nil	Nil
Saponification Test	Nil	Nil	Nil	Nil	Nil
Sulphuric Acid Test	Orange on mixing dark brown, oil violet	Very pale brown	Yellow on mixing, reddish brown, oil violet	Yellow on mixing black, oil layer dark brown	Very pale brown

1. Refiner.
2. Dealer.
3. Pharmaceutical House.
4. Wholesaler.
5. Dealer.
6. Dealer.
7. Wholesaler.
8. Dealer.
9. Wholesaler.
10. Refiner.
11. Pharmaceutical House.
12. Pharmaceutical House.
13. Dealer.
14. Refiner.
15. Wholesaler.

LIQUID PETROLATUM*.

JOSEPH P. REMINGTON.

The war in Europe has caused considerable difficulty in obtaining Liquid Petrolatum of the quality suited for internal administration.

The great demand for this liquid has, of course, stimulated American manufacturers of petroleum products to produce an article equal to the "Russian Mineral Oil" as it is called.

It has been stated that the latter, owing to its having been procured from oils of the naphthene series possesses qualities which fit it for internal use, while the American Oil, being obtained from the methane series, cannot be refined so as to produce an article equal to the Russian Oil. Attempts have been made from time to time, during the last few years, in this direction but so far with varying success.

An American Oil is coming into use and undoubtedly a way will be found to solve the problem. The points which at present are dwelt upon are these: Specific gravity, viscosity, freedom from taste, absence of sulphur, and fluorescence.

Specific Gravity.—The question of specific gravity need not be vital. It appears that the oil from American source is of a lower specific gravity than that furnished from the Russian sources. Medical writers on the subject insist upon a heavy oil, but if the other requirements are thoroughly carried out, a wider range of admitting oils of lower specific gravity could be directed by the Pharmacopoeia.

Viscosity.—The degree of viscosity seems to be of more importance than specific gravity. For oils to be used for internal use, a high degree of viscosity is believed to produce an oil which will not cause leakage through the rectum. On the other hand, some medical authorities believe that viscosity has nothing whatever to do with leakage, but that this is due to the patient using an excess. The manufacturers are trying hard to satisfy the requirements for viscosity and some are succeeding.

Freedom from taste is, in the writer's opinion, of the greatest importance, and to produce an oil fully meeting this requirement causes the manufacturer more trouble than anything else. Americans almost universally dislike the taste of coal oil and when the slightest amount of sulphur is present, hydrogen sulphide or similar compounds are produced in the stomach and the disagreeable taste of the eructations renders the product unsalable, and its rotten egg flavor is unbearable.

Fluorescence.—The property which some liquids possess of emitting colors while light is being passed through them, in other words fluorescence, is regarded by dealers as one of the best practical tests to determine a proper degree of refinement. Fluorescent oils are rejected because this quality is believed to indicate lack of purity. Whether a slight fluorescence is a disadvantage medicinally, provided the oil is tasteless, is yet a question to be determined. In the work of revision of the Pharmacopoeia, many samples have been submitted to the writer and the fact stands out prominently that samples of oils of American manufacture have with

* Read at the meeting of the Pennsylvania Pharmaceutical Association, June, 1915.

few exceptions *failed to retain* the properties of tastelessness and freedom from odor. There is also a tendency to become yellowish or yellowish-brown in time. It would seem from some experiments which have been made that exposure to direct sunlight causes discoloration. This is remarkable because exposure to sunlight has been regarded for centuries as inducing a bleaching or decolorizing effect on most substances. At present it would seem that manufacturers of American oil have not entirely mastered the problems of purification.

At present buyers of American Liquid Petrolatum should be cautious about laying in a stock of the Oil in large lots, for they are likely to find that the last portions have acquired properties which will render it unsalable, since the slightest coal oil taste makes it unfit for internal administration.

The writer has faith in the American manufacturers' ability to overcome these defects and the greatest encouragement should be given them to produce an American Oil suitable for all purposes.

The new Pharmacopoeia will cover these points by appropriate tests. The sulphuric acid test to determine the presence of carbonizable impurities; the lead oxide test for sulphur compounds; a test for absence of acidity or alkalinity, and the physical tests to determine the tastelessness and freedom from odor and fluorescence will be given. A light Liquid Petrolatum will also be official for use in atomizers and nebulizers.

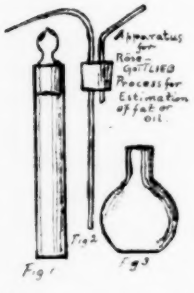
The definition will be changed simply to read, "A mixture of liquid hydrocarbons" as it is unnecessary to specify the source from which it is derived, either the methane or naphthene series.

FATS AND OILS.*

The Adaptability of the Röse-Gottlieb Method for the Estimation of Fat and Oil in Certain Pharmaceutical Preparations.

CHARLES A. HACKMAN, F. I. C.

Judging from statements recorded in past numbers of this journal (Chemist and Druggist), it does not appear to be generally known that the Röse-Gottlieb method affords the most rapid and accurate means for the determination of oil in many pharmaceutical materials and preparations. For example, the estimation of oil in cod-liver oil and malt presents many difficulties when the usual method of extraction with immiscible solvents is attempted; but with the Röse-Gottlieb method, suitably adapted, these difficulties are readily overcome, and the present note has been written with a view to drawing attention to the excellence and wide adaptability of the process. Originally designed by Gottlieb for the estimation of fat in milk (Analyst, 1898, 259), and subsequently modified by Röse, the method was prominently brought before analysts by H. Droop Richmond in "The Analyst" for October, 1908, p. 389. In that communication its suitability for the estimation of fat in dried milks was



* Chemist and Druggist, July 3, 1915.

especially pointed out, and in concluding his paper the author made the following remarks:

"The method is so convenient, accurate, and rapid, that I now use it in preference to all others for the analysis of milk (of which 5 cc. is taken and no water added) and all milk-products; it is also applicable to the analysis of eggs, egg-yolk, and dried egg-preparations, provided the quantities taken are not too large." Continued and extended use of the process for many years enables the writer of this note to confirm the above remarks in every particular, and for the benefit of those who have, perhaps, hitherto regarded the method as applicable only to milk, a detailed description of its working is here appended. The apparatus required is of the simplest description, and consists of Fig. 1, a narrow, accurately stoppered tube, approximately 7 in. high and 1 in. wide; Fig. 2, a cork to fit this tube carrying thin wash-bottle tubes; and Fig. 3, a light glass flask, and (4) a condenser. The reagents used are (1) solution of ammonia (0.880 ammonia diluted with an equal volume of water), (2) absolute alcohol, (3) ether (sp. gr.= 0.720), and (4) petroleum ether (boiling point below 60° C.).

The details of procedure in the case of milk are as follows:

The tube, without its stopper, is first accurately weighed; 5 cc. of the sample is then pipetted in, and the whole weighed again, the difference giving the exact weight taken. Next 0.5 cc. of the ammonia solution is run into the tube, followed by 5.0 cc. of alcohol, and the whole thoroughly mixed. Then 12.5 cc. of ether (measured out in a small cylinder) is added in approximately 5 cc. quantities at a time, holding the tube in the right hand and imparting to it a rotary motion after each addition in order to secure thorough admixture. A similar quantity (12.5 cc) of petroleum ether, measured in the same way, is finally added and mixed. The tube, with the stopper loosely in position, is placed in a water-bath containing lukewarm water and gently rotated until the ether-vapour just commences to escape and condenses around the ground-in portion of the stopper. As soon as this happens the stopper is pushed home, and the tube and its contents are cooled under the tap. After gently inverting once or twice, the tube may either be set aside for the mixed layer to separate, or preferably "whirled" immediately in a centrifuge until this separation is complete.

The stopper is now cautiously withdrawn, and its underside rinsed off into the tube with a few cubic centimeters of mixed ethers contained in a small wash-bottle. The use of the warm-water bath employed above is apparent at this stage, since the slight vacuum produced prevents any of the contents of the tube being ejected—as would otherwise be the case—when the stopper is withdrawn. The cork carrying the wash-bottle tubes is now inserted in the place of the stopper, and the long tube adjusted until it is about one-fourth inch above the line of demarcation of the two liquids. On applying gentle pressure to the shorter tube, either by the mouth or by means of a small pressure-tank provided with a finely acting valve, the whole of the ethereal layer is blown off into the light glass flask. The cork is next carefully removed, the outside of the longer wash-bottle tube rinsed back into the Gottlieb tube, 25 cc. of mixed ethers added, the process described above repeated in exactly the same manner and the separated ethereal layer again blown off into the flask containing the first portion.

In the case of milk two "blow-offs" are sufficient, but in some substances richer in fat or oil three or even four are necessary.

The thin glass flask containing the united ethereal extracts is now attached to a condenser and the mixed ethers are distilled off. After detaching the flask the residual alcoholic and ether is blown off by means of a current of air, and the residue dried to constant weight in the water-oven. The fat is next dissolved in a little petrolatum ether and cautiously decanted from any insoluble residue. After several rinsings to remove the whole of the fat, the flask is again dried and weighed, the difference between the two weighings giving the amount of fat in the weight of sample taken.

In adapting this process to substances other than milk it is important to keep the relative proportions between the water and immiscible solvents constant, and to secure thorough admixture of each reagent. Thus in the case of extract of malt with cod-liver oil a weighed quantity approximating to 1 gram is taken and dissolved in sufficient warm water to occupy 5 cc. The remaining procedure is then as described above. For all emulsions the process will also be found eminently suitable. The estimation of the proportion of cacao-butter in cacao and chocolate is possibly of minor importance to pharmacists, but the Röse-Gottlieb process in the hands of the writer, employed with slight modification in the order of adding the reagents, has proved the quickest and most accurate process for this estimation that is known to him.

LIMITATIONS OF THE REACTION WITH NINHYDRIN.

Current medical literature bears witness to the interest which has attached quite recently to the triketohydrinden reaction, more popularly known by the name of ninhydrin reaction. Until very lately it has been regarded as a characteristic test for amino-acids or compounds of them, and consequently has found a wide application in some of the modern serum reactions, such as those introduced by Abderhalden in relation to pregnancy, cancer, etc. In view of the growing use of the reagent, it deserves to be pointed out that many substances which in no sense exhibit a combination of amino and carboxyl groups, as do the amino-acids and proteins, nevertheless give a characteristic reaction. Amines, amino-aldehyds, aminosulphonic acids, urea derivatives and certain organic acids may be mentioned in illustration of this statement. To these known exceptions Neuberg has added a new series of both organic and inorganic substances, some of which might lead to deception in respect to the reaction. It would be of little advantage to recite here this list of compounds, which the specialist in this field should learn at first hand. Perhaps it is worthy of mention, however, that a minimal putrefactive change in proteins is sufficient to provoke the appearance of substances which give a strongly positive test with the ninhydrin reagent. They are presumably putrefactive bases which are in part of a volatile nature. These facts point to the necessity of caution in the interpretation of findings based on the use of the ninhydrin test.—*Journal A. M. A.*

ETHICS OF BUSINESS.*

With the rapid mode of transportation, with the advanced system of communication, with the improved methods of manufacture, with the many labor-saving inventions, business is making head.

By keeping pace with the scientific achievements of the times, business has demonstrated that it is not a theory. It is a reality built upon efficiency, intelligence and enthusiasm.

In former years, the young man who was not fitted for a profession was usually placed in business. Today this has changed, for this is an age of method and concentrated energy. And unless he is especially trained for the work, he is doomed to disappointment and failure. He must know one thing and know it absolutely, if he is to meet with material success and commercial supremacy. He must have the faculty of concentration. He must give prompt, active and constant service. He must handle his day's complex work on a schedule as exact as a railroad time-table. Enthusiasm and initiative are essential to success. Initiative requires alertness and originality. It is creative and constructive. Enthusiasm is the inspiration, the force, the propelling motor that pumps life into every successful business.

Business must have facts instead of fiction, figures instead of guesses, information instead of experiments, results instead of speculations. Big business is run and financed upon positive information, by detailed records, by charts and statistics. It is governed entirely from tabulated sheets; its judgments are formed by the rule of percentage; its opinions are based upon figures and facts; operations are planned by units and volumes. Commercial leaders think and act in dollars and cents. Nothing is left to luck or chance.

The most successful careers are those that are shaped by their own hands, that are run on conservative lines, and maintained by cautious and prudent principles. This is the method most highly regarded by the business world today. Business cannot be negative. It must be either a success or a failure.

All of us are more or less dependent upon our neighbors for existence. In the beginning men with rudely-formed weapons issued from their caves to kill the wild beasts of the forest. These were to supply them with food and clothing. But as time went on, certain people were able to kill more than others, while some became more proficient in curing skins and pelts. Thus exchange became necessary, and trade was born.

INTERDEPENDENCY.

Today it is not possible for a nation or even an individual to be independent, because the materials from which the necessaries of life are made, come from widely separated sections and countries. Hence came the necessity of railroads and steamships. These are the agencies of commerce. Through these channels we secure food, clothing and shelter. These are the primal wants of man. As civilization advances, nations become more and more dependent upon one another. Consequently, commerce becomes one of the greatest factors in modern business.

* Parts of an article by Isaac Schnewind in The Fra, March, 1915.

The one great curse of business is overproduction. The tendencies are to push business to its utmost limit and then try to find a market for the increased production. Manufacturers have gone on expanding until the markets have become overstocked. Then comes the unloading—the bottom falls out, and the crash is heard in all parts of the industrial world. Long ago business men recognized that the world is a large community, and causes and effects in one country will find their reflex in all others. Thus we see that those who till the soil find that the price of their product is fixed in the world markets.

ORGANIZATION.

The tendency of modern business is towards organization and economy. In hundreds of industries the profits of today are wrung from the waste and the refuse of former days.

Business to be successful must have normal profits. Continuous sacrificing of profits ultimately means failure. When the supply and demand are equalized, then business will be done at a profit. The safe and sound method shows that decreased business with normal profits is better than increased business with no profits. The foreigner realizes this. He first looks to profit. If he cannot obtain it in one market he seeks it in another. This is the chief reason why English and German manufacturers have done business in every market of the world. But most of our concerns go on wondering and blundering.

Competition, which is the desire to excel, is universal. In every sphere of human activity, competition is essential for securing the best results. Formerly competition was the life of trade—today competition is the death of trade. Competition solely of price and not quality is "cut-throat" competition. But in the public mind the fierce price competition is still the basis of industrial progress.

In many branches of trade it has been war to the knife, until some of the biggest and strongest concerns have fallen by the wayside. By unfair competition an irreparable damage is done to the textile industry, by the so-called "world-beaters." This is an article sold so cheaply that no competitor is supposed to meet the price. But this very act forces other houses to make unwarranted concessions, and in the end shows a loss to all concerned. When competition forces the price below the cost of production, it becomes destructive. Competition became fatal when machines were invented whereby production exceeded the immediate demand. We need look only into the large number of retirements from business to understand what such competition means.

CO-OPERATIVE COMPETITION.

Business transactions should be profitable to both buyer and seller. And this condition would exist if we cease this unfair competition which prevails in America.

Co-operative competition should be the motto of every business man. Co-operation on the "live and let live" plan will be the sensible policy of the future. Foolish men compete—wise men co-operate.

To be successful one must be his own chemist and analyze his own case. He must eliminate negative factors; he must sift, sort and strengthen his men and methods. For when business dies the nations perish. Greece started her down-

ward course when she began giving her subjects something for nothing. A pension was devised for every citizen, but the nation became bankrupt. Rome had the same policy. She gave free shows, free entertainments and finally free bread. Then Rome fell.

"Profit-sharing limited to the sharing of profits of successful years, without any responsibilities for the losses of unsuccessful years, is certainly unfair." The system that couples responsibilities with liabilities is more equitable. Unrest in industry is worldwide and is caused by a desire for better conditions. The progressive man constantly works for human betterment. He is always building, extending, improving. Unrest is the sign of progress. Better food, better health, better clothing, better housing and better education is the cry of civilization.

Plato says, "The origin of wars is the pursuit of wealth, and we are forced to pursue wealth because we live in slavery of what wealth buys."Money is only the measure of power. Money for its own sake is not worth the struggle. When money minimizes brains, when it makes men feel that they can buy their way through, when money is the beginning and end of everything, then it nullifies the human element, and sooner or later the stoutest ship must go under.

A NEW IMMUNIZATION THEORY.

According to a new theory of immunization against bacterial disease evolved by Drs. Henry Smith Williams and James Wallace Beveridge, two New York physicians, the red and white corpuscles of the blood are the chief agents that protect human organisms against the ravages of bacteria, and this they have termed the proteomorphic theory. These investigators believe that the white corpuscles deal with the unbroken proteins that they may come in contact with, whether they be of bacterial or dietetic origin, and that the red corpuscles deal with the partially cleaved molecules of protein. In other words, the business of the white corpuscle is to break down or cleave this protein molecule, not synthesize it. And in summing up *American Medicine* condenses their statement: "In this view, then, the red blood corpuscles have an immunizing function strictly complementary to that of the white blood corpuscles, and no less important. One legion of cells co-operates with the other, each having its own special field. The white corpuscle deals with all formed bodies and full-sized protein molecules of foreign type that make their way into the blood stream. The red blood corpuscle deals with the latter cleavage products of protoplasmic activity. In carrying out their respective tasks, the leucocyte supplements the work of the ferments of the digestive tract; the red corpuscle supplments the work of the leucocyte and relieves the ultimate tissues in considerable measure of the task of protecting themselves against small-moleculed nitrogen products that might prove harmful."—*Journal A. M. A.*

Editorial Notes and Announcements

E. G. EBERLE, Editor.....Columbus, Ohio

All communications for insertion in the JOURNAL, or respecting advertising should be sent to the Editor.

The Association does not accept responsibility for the opinions of contributors. Offensive personalities must be avoided.

Under the rules of the Post Office the JOURNAL can be regularly mailed only to bona-fide paid subscribers. Subscriptions and association dues should be sent to the Treasurer, H. M. Whelpley, 2342 Albion Place, St. Louis, Mo.

Requests for back numbers, and claims for missing numbers should be sent to the Editor.

Claims for missing numbers will not be allowed if sufficient notice has not been given of change of address, and in no case if received later than sixty days from the date of issue.

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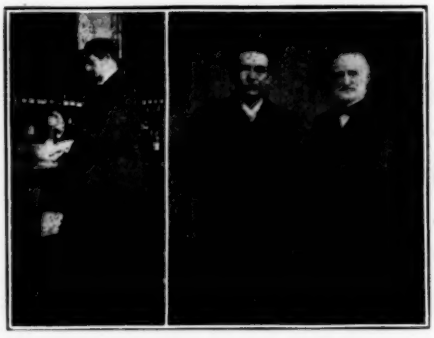
THREE DECEASED PHARMACISTS WHO CONTRIBUTED TO THE HISTORY OF AMERICAN PHARMACY.

F. W. Meissner, of LaPorte, Ind., has donated two photo postal cards to the Historical Section of the A. Ph. A. One of Leo



Leo Eliel, Charles E. Dohme—Dr. F. Hoffman.

Eliel at work, and the other conveying greetings and a message to him from Fr. Hoffmann and Charles E. Dohme.

The card was dated May 17, 1902, at Wiesbaden, and expresses the wish that both of these beloved and distinguished pharmacists would attend the meeting in Philadelphia that year. Health prohibited the attendance of Dr. Hoffmann, but he sent his valuable address, prepared for the semi-centennial meeting entitled, "A Retrospect of the Development of American Pharmacy and the American Pharmaceutical Association."

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GLUE FOR GAS TUBING.

In Germany solidified glue is now manufactured into tubing, substituting rubber. The Technische Monatshefte of April 10th, states that for some purposes this tubing is superior to rubber, more impervious to gases and more resistant to heat. It is claimed that this material will not deteriorate as quickly as rubber and when suitably encased will withstand a high pressure.

The cost is given at sixty pfennigs per meter and is sold under the trade name of Sonjatin. Professor J. Trube is the inventor and he makes the statement that this new composition is peculiarly suited for conductors of petroleum and gasoline as well as gases, but is attacked by water. The latter fact presents an objection and limits the use of the product.

"THE DRUGGIST AND HIS PROFITS."

Harry B. Mason, Editor of "The Bulletin of Pharmacy," has for quite a number of years made a close and intimate study of drug-store profits and has just published a book entitled, "The Druggist and His Profits," which deals with that very important part of the business.

The scientific study of the details of business has contributed to the modern store service. To compound a preparation is one thing, but to understand the chemistry involved, is another. So also in business, an intelligent understanding is necessary in order to anticipate profits or conduct it so that there is no uncertainty of results. The haphazard way of doing business, simply selling goods, is unscientific; in a successful business, a knowledge is required of the relation that obtains between the expense account and the volume of sales.

The book is interestingly written and goes into the details of business conduct without beclouding the scheme with unnecessary phraseology and impractical theories. In its fifteen chapters the production of profits is viewed from every angle and the subjects are discussed in a thorough, business-like manner. The lessons are taken from life, in other words, active businesses are analyzed; the methods presented are not presumptive, nor the remedies advised empirical.

It is unnecessary to say that there is no subject that confronts druggists or any other business men which has a greater importance than that of producing profits; hence in this work Mr. Mason has done a service which will doubtless be appreciated. E. G. E.

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New and Nonofficial Remedies, 1915, Containing Descriptions of the Articles which have been Accepted by the Council on Pharmacy and Chemistry of the American Medical Association prior to January 1, 1915. Chicago, 1915.

As suggested by the title this book contains more or less comprehensive descriptions of the composition, dosage, action and uses of and tests and requirements for the new and nonofficial remedies which have been examined by the Council on Pharmacy and Chemistry of the American Medical Association and which appear to comply with the rules of the Council. In submitting this publication the Council again emphasizes its desire to have physicians and pharmacists understand that acceptance of an article does not necessarily mean a recommendation, but that so far as known the article complies with the requirements of the rules of the Council as printed in the introductory portion of the book. The Council also asks for criticisms and corrections to aid in the annual revision of the material contained in this volume. The present edition includes a total of 426 pages and XVI octavo pages and the material in a general way follows the precedent that has been established in previous volumes. The practice of classifying the several articles under general headings has been considerably elaborated on, a large number of new headings being included and some of the headings previously used extended so as to make them more useful for reference. In addition to the descriptions of new and nonofficial remedies, the book contains a reprint of the rules covering the admission of proprietary articles to the book, New and Nonofficial Remedies, with comments thereon, a general index of 34 pages, an index to manufacturers of products included in the book and a list of references to proprietary and unofficial remedies, not admitted to N. N. R. Altogether the book represents a volume of useful information that the up-to-date pharmacist or the wide-awake pharmaceutical chemist cannot well do without. M. I. W.

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Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1914, with the Comments that have appeared in the Journal. Press of the American Medical Association, Chicago, 1915.

This small octavo volume of 143 pages includes a collection of the reports of the Council on Pharmacy and Chemistry of the American Medical Association that have appeared during the year in the Journal of that Association, elaborated in some instances by the addition of records of analytical work or of other laboratory investigations which because of their technical nature had been omitted from the reports as published in the Journal. The complete reports are published so as to make the investigations available to chemists, pharmacologists and scientists in general who might be interested in medicine or who may have occasion to further investigate the

preparations or problems under discussion. In addition to critical reports on widely advertised proprietary preparations, this volume also contains a report on liquid petrolatum or Russian mineral oil and references to a number of products that have been deleted from N. N. R. because of non-use or because the product is no longer marketed by the original manufacturer. As a report of progress and as a book of reference to investigations bearing on the use of proprietary medicines this volume will be a welcome addition to the reference book shelf of the active pharmacist or chemist. M. I. W.

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Annual Report of the Chemical Laboratory of the American Medical Association, January-December, 1914. Press of the American Medical Association, Chicago.

The reports included in this volume are given under three headings: (1) reports of contributions, (2) abstracts of reports, (3) reports not previously published. The object of the publication is to furnish to chemists, and to others who may be interested in drug analyses, readily available references as to work done in the chemical laboratory of the American Medical Association. The report includes a number of analyses of preparations of the "patent medicine type." Among the methods of analyses that should be of more than passing interest is a contribution by L. E. Warren on "The Detection of Emodin-bearing Drugs in the Presence of Phenolphthalein." This latter contribution is particularly interesting at the present time because of the number of preparations containing phenolphthalein that are being marketed usually without any suggestion that this particular product is present. M. I. W.

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THE HOMOGRADE THERMOMETER.

A new clinical thermometer scale is advocated and now in use, the thermometer being known as the "Homograde." The normal temperature is given at 100, but the measurement of the expansion or contraction is fixed by the Fahrenheit scale. Thus instead of one degree of temperature being indicated by 99.6, it is read on the new scale as 101. Doubtless this is a decided improvement, but why not adopt 0 degree as normal. Conversion can then at once be made by adding or deducting the degree indicated, thus a degree below normal which is minus 1 would correspond to 97.6 F. or plus 2 degrees to 101.6. To convert Homograde degrees to Fahrenheit requires that one-third be taken of that number and deducted from the degree Homograde and then 32 added. While easy enough it requires figuring. Thus deduct from 100 degrees Homograde 33 1/3 leaves 66 2/3, add 32 gives 98 2/3. If 0 degree is used as normal then the figures would at once give the temperature above or below normal. Carrying the thought through, the 100 degree of the Homograde might, on account of long custom, unthinkingly be taken to indicate 1.4 degrees of temperature, while such error would not obtain in the suggested scale.

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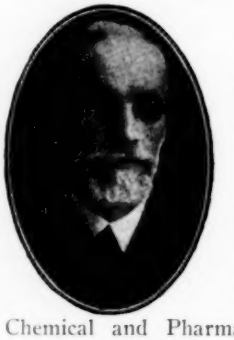
THE HANBURY MEDALIST OF 1915.



Edward Morell Holmes, F. L. S., has been awarded the Hanbury Medal this year for high excellence in the prosecution of original research in the natural history of drugs. The jury of award were the Presidents of the Linnæan, Chemical and Pharmaceutical Societies of the British Pharmaceutical Conference and Mr. E. H. Farr.

The Hanbury Medalist was born at Wendover, England, in 1843, and at the age of 72 is still intensely active. In 1897 Mr. Holmes was awarded the Flueckiger Medal. By the expressed wish of the late Sir Thomas Hanbury, Mr. Holmes was asked to select for the Pharmaceutical Society Herbarium any or all plants of medicinal interest from the large Botanical Herbarium left by Daniel Hanbury; these he has catalogued for the Society.

Mr. Holmes has taken a great deal of interest in Chinese and Japanese drugs, procuring for the British Pharmaceutical Society specimens of the drugs of these countries from International Exhibitions. That the subject of this very brief sketch is a persistent worker is conclusive from a statement he has made, that it took him twenty years to fix the exact botanical source of genuine jaborandi and after the same length of time, definitely identified the plants yielding myrrh and Japanese aconite root. For

the last two British Pharmacopœias he has been the botanical referee, co-operating with the director of the Kew Gardens.

Mr. Holmes has always taken an active interest in pharmaceutical progress both from the commercial as well as scientific standpoint, and his thorough familiarity with the subject is substantiated by his article on Pharmacy in the Encyclopedia Britannica.

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PROCESS OF TOUGHENING ORDINARY FILTER PAPER.

There has been some difficulty in obtaining hardened filter paper. Wm. R. Rankin, after experimenting with various treatments, finds that the following will give good results:

Good filter paper is dipped in nitric acid sp. gr. 1.42, drained quickly and then placed in running water to remove most of the acid; then dipped in .5 percent ammonia water to completely neutralize all acid. The paper is next washed in running water and partially dried between blotting paper, and finally in a water oven at 100° C.; when dry, the paper is again subjected to the same process. In the treatment of the paper precaution must be exercised, as the cellulose of the paper has been nitrated, and if the temperature in drying the paper is too high, it is apt to char suddenly. The shrinkage of the paper amounts to about ten percent.

The paper so treated, has a hard, smooth surface and will permit a liquid to pass through very quickly, when used for filtration.

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CAROLINA JOURNAL OF PHARMACY.

Number 1, Volume I, of the Carolina Journal of Pharmacy has come from the press and from now on is to be issued quarterly. Prof. J. G. Beard is the editor and the Journal is published by the William Simpson Pharmaceutical Society of the University of North Carolina School of Pharmacy. A cut of William Simpson, forty-second President of the American Pharmaceutical Association, adorns the front page. The first number would indicate that the purpose is not only for developing greater interest among local pharmacists, but to be of general service to pharmacy, so the American Pharmaceutical Association is not overlooked and pharmacists of the state are urged to affiliate. A number of interesting and valuable articles are included in this issue, together with items of more or less local interest. The publication is deserving of encouragement by North Carolina pharmacists, whose support is more particularly solicited.

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HYOSCYAMUS OF THE ANNUAL AND BIENNIAL.

The British Pharmacopœia fails to state whether hyoscyamus leaves of the annual or biennial should be employed. The definition given is for leaves of Hyoscyamus niger, collected from the flowering plants and dried. Tincture of hyoscyamus prepared from biennial leaves makes an opalescent or slightly milky solution with water while that of the annual makes a clear solution. A tincture prepared from official drug, according to definition may not always appear as the same preparation to the patient. E. M. Holmes points out the difference that may obtain, not only in the preparation, but with the drug of the market.

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RANCIDITY OF FATS.

Prof. Henry L. Smith contributes an article on Rancidity of Fats to the Pharmaceutical Journal and Pharmacist of July 3. While rancidity of fats is usually accompanied by increased acidity, there is no definite relation between acidity and the degree of rancidity. Conditions which conduce hydrolytic action also favor rancidity, which is generally caused by oxidation. Fats should be as free from moisture as possible, be protected from light and the influence of air, but this does not insure protection, as small amounts of impurities which may exist in the fat, by becoming oxidized, contribute to the rancid odor. Professor Smith suggests the use of sodium silicate for removing free acids from fats.

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THE DOCTOR'S ORDERS.

She was the sort of woman who always tells everybody her business. With a cheery smile she settled herself at the counter of the hosier's shop and began:

"My husband has just been very ill—very ill indeed. So I have to do his shopping, and I want a shirt."

"Certainly, Madam," said the assistant courteously. "Stiff front and cuffs?"

"Oh, no!" she exclaimed in horrified tones. "The doctor says he must avoid anything with starch in it!"

Necrology

DR. JOHN B. BOND.

Dr. John B. Bond, nestor in pharmacy of Arkansas, died July 16, 1915, at the home of his daughter, Mrs. H. S. Hollis, in Warren, Arizona. His body was brought back to Little Rock, Ark., for burial. Mrs. Bond, who shared with him the joys and sorrows of a well-spent life, survives the deceased.

A sketch of Dr. Bond appeared in the January number of this Journal. He was

born November 15, 1836, at Gettysburg, Pa. Soon thereafter his parents came to Missouri, where the son was educated and grew to manhood. During the war between the states, Dr. Bond was chief surgeon of Little's Division, Price's Corps, and later medical purveyor on the staff of General Holmes and assigned to duty in Arkansas. He practiced medicine until 1872, when he established the drug business now conducted by his son.

Dr. Bond was one of the organizers of the Arkansas Association of Pharmacists in 1881, and elected the second President, serving for three consecutive years. He was a member of the Arkansas Board of Pharmacy from the time of its organization and for fifteen years served as presiding officer. In 1883 Dr. Bond joined the American Pharmaceutical Association and at once became active in the National Association of Boards of Pharmacy, when it was organized, serving as chairman of the Executive Committee for one term. While devoted to pharmacy in his own state, he was ever helpful in the National organizations, and when the American Pharmaceutical Association decided to meet in Hot Springs, he expressed deep appreciation for the honor to the state he dearly loved.

The following is abstracted from an editorial of the Arkansas Democrat, and speaks of the esteem in which the deceased was held at home:

"Death only emphasizes the work, the life, the achievements and the influences of some men; there are great characters whose influences rise above the forgetfulness of their fellows and disproves the sage fallacy that the good men do is oft interred with their bones. Such a man Little Rock has just been called upon to mourn in the passing of Dr. John B. Bond, one of the truly great men of the community. For fifty years he was a stalwart figure in public affairs, one whose wise counsel in public or private relations was sought and heeded.

"Dr. Bond was not great as some account greatness—he never aspired to political office, neither did he participate in that consuming contest for wealth which has been the incentive of many a life. He was actively interested in all movements for civic betterment, and with his pen, his voice and his money he assisted in the advancement of many projects that aided municipal progress.

"He was interested in schools, in the promotion of industry and commerce, in the moral cleanliness of the city he loved, and in everything that would make his fellow citizens happier and more contented. He was not selfish in this, but altruistic with a self-sacrificing devotion that was an incentive to others less enthusiastic. He was a leader in his profession, an authority to whom the druggists of the state deferred as one in whose opinion they had implicit confidence. Dr. Bond was emphatically ethical, jealous of the honor of his calling, first to condemn that which was wrong or harmful, as well as first to command the good and helpful.

"These were the qualities that made him

loved by his intimates, esteemed by his business and professional associates, and respected by all. He was not a dissembler; he probably would not have succeeded in finer arts of diplomacy, which is too often the synonym for deception. But he was outspoken and direct, although avoiding unseemly contention or needless controversy. Himself the soul of honesty, it was a source of deepest pain that others should be dishonest.

"His passing, with the seventy-eight years that until recently had set lightly upon his erect shoulders, is a distinct loss to the community and his profession. He was one of God's answers to the poet's prayer, 'That He might give us men.'" E. G. E.

The Bulletin Board

PROGRAMS OF SECTIONS.

The programs of the Sections herewith are not complete and will be added to prior to the sessions.

PAPERS FOR SCIENTIFIC SECTION.

Tinctures, W. L. Scoville.

The Increase in Acidity of Hydrogen Peroxide on Standing, C. M. Ramsay and A. M. Clover.

The Retarding Effect of Certain Substances on Pepsin Digestion, C. M. Ramsay.

Infective Agents, F. E. Stewart.

Leucocytic Extract, Mr. Meinhard.

Hydrolysis of Some of the Common Vegetable Oils, W. F. Rudd.

Contraction Produced by Solutions of Salts, A. Bolenbaugh.

Standards and Tests for Absorbent Cotton and Absorbent Gauze, F. B. Kilmer.

Biological Test for the Presence of Arsenic, Tellurium and Selenium, A. Schneider.

History of the Discovery of the Alkaloidal Affinities of Hydrous Aluminum Silicate, J. U. Lloyd.

Estimation of Morphine in Pills and Tablets, H. W. Jones.

Sempervirine, L. E. Sayre.

The Cooperation of Science and Industry, A. R. L. Dohme.

Stability of Preparations Cortaining Yellow Phosphorus, H. Englehardt and C. E. Winters.

Estimation of Atoxyl, H. Englehardt and C. E. Winters.

The Assay of Balsam of Peru, F. D. Dodge.

COMMERCIAL SECTION.

Tuesday, August 10, 2 P. M.

Joint Session with Section on Education and Legislation.

Address of Chairman of Commercial Section, Edward H. Thiesing.

Address of Chairman of Section on Education and Legislation, Frank H. Freericks.

The Business Needs of Pharmacy and Legislation. For the Commercial Section, W. H. Cousins. For Section on Education and Legislation, Dr. James Hartley Beal.

Commercial Training in Colleges of Pharmacy—How the College May Better Equip the Student for Business. For the Commercial Section, Dr. Henry P. Hynson. For the Section on Education and Legislation, Dr. Wm. G. Anderson.

Present Methods of Prescription Pricing. For the Commercial Section, Dr. A. O. Zwick. For the Section on Education and Legislation, P. Henry Utech.

Nomination of Officers.

Adjournment.

SECOND SESSION.

Wednesday, 9:30 A. M.

Individuality in Advertising, with illustrations, Dr. Wm. C. Alpers.

Arranging and Indexing Stock to Promote Sales and Improve Service, Maurice P. Schwartz.

An Eight Barreled Moth Ball Sale, Wm. J. Lowry, Jr.

The Circulating Library as a Side Line for Druggists, Franklin M. Apple.

Advertising the Prescription Department, Addison Dimmitt.

Own Make Non-Secrets Compared with Other Makes, Fred W. Connolly.

Possibility of a National Line of Non-Secrets to be Prepared by the Individual Druggist but with Common Ownership of Copyrighted Labels. Subject treated by a paper from Prof. Theo. D. Wetterstroem, Benj. E. Pritchard and D. N. Robin.

Adjournment.

THIRD SESSION.

Thursday, 9:30 to 11 A. M.

Perfumes—Basic Material—Production—Preservation—Selling Points, Wm. A. Hall.

Economy in Store Management, A. S. Parker.

Developing the Sale of Cigars. Subject treated by a paper from Ernest Berger and Sol. A. Eckstein.

Election of Officers.

Installation of Officers.

Final Adjournment.

HISTORICAL SECTION.

Thursday, August 12, 2 P. M.

The Chairman's Address, Frederick T. Gordon.

The Historian's Report—E. G. Eberle.

The Secretary's Report—A. H. Clark.

Pharmaceutical Happenings from 1810 to 1814, Being Additions to Contributions Presented 1913-1914, Otto Raubenheimer.

Pharmaceutical Events a Century Ago, Otto Raubenheimer.

Historical Notes of Kansas Pharmaceutical Association, J. S. Chism.

Some Contributions Pharmacy Has Made to Civilization, Miss Zada Cooper.

Brief History of the Work of the Indiana Board of Pharmacy, Wm. H. Rudder.

A memoir of John Criddle Wharton, J. O. Burge.

History of Pharmacy in Montana. Chas. E. Mollet.

Animal Drugs Used in Medicine During the Middle Ages in England and France, George Gehring Marshall.

Autobiographies of American Pharmacists, Wilhelm Bodemann.

The Dreiss Drug Store of San Antonio, Texas, accompanied by photographs, Herman Dreiss.

The Founders of the California College of Pharmacy, Richard E. White.

Early Pharmacy on the Pacific Coast, J. F. Llewellyn.

Illustrated Lecture: Voyage to the East Indies and Drug and Spice Trade of 16th and 17th Centuries, Arthur W. Linton.

Nomination and Election of Officers.

Societies

AMERICAN CHEMICAL SOCIETY TO MEET IN SEATTLE.

The American Chemical Society will hold the fifty-first annual convention in Seattle August 31st; the final social session is scheduled in San Francisco.

As there is a Division of Pharmaceutical Chemistry, some members of the American Pharmaceutical Association will doubtless take advantage of this opportunity to attend this meeting.

The American Chemical Society is listed among the organizations that will have representation on the U. S. Naval Advisory Board of Inventions, of which Thomas A. Edison is to be chairman.

Frank R. Eldred, of Indianapolis, is chairman of the Division of Pharmaceutical Chemistry of the American Chemical Society.

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NEW YORK ASSOCIATION.

The thirty-seventh annual convention of New York State Pharmaceutical Association was held at Buffalo June 29, continuing for four days.

One of the interesting features of the meeting was the address by Ex-Senator Hill, of Buffalo, on the conflict which may result between the states and federal government in narcotic legislation. He viewed the Harrison law as an encroachment upon the rights of states, more particularly on account of the power given the commissioner of internal revenue to make rulings that add to or take from the law.

Resolutions were passed condemning the practice of offering premiums, trading stamps, etc., as unfair competition. A large number of interesting papers were read.

President A. S. Wardle, of Hudson, was re-elected, the other officers are as follows: First vice-president, F. E. Chilson, of Rochester; second vice-president, R. A. Austin, of Cairo; third vice-president, J. T. Stoddard, of Buffalo; secretary, E. S. Dawson, of Syracuse; treasurer, Frank Richardson, of Cambridge.

Executive committee: Dr. Joseph Weinstein, of New York City; Charles N. Lehman, of Tottenville, L. I.; G. S. Slade, of Oneonta.

Dr. William C. Anderson, Dr. Joseph Weinstein and Dr. A. B. Huested were selected as delegates to the American Pharmaceutical Association meeting.

Richfield Springs was chosen for next place of meeting, during the third week of June.

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INDIANA ASSOCIATION.

President Ernest Stahlmuth in his address at the Indiana State Pharmaceutical Association meeting, held at LaPorte, scored the dispensing physician. He deplored the lack of interest by druggists in strengthening the Association.

Among the papers read were the following: Legislation in Indiana, J. M. Barrett; Then and Now, Prof. H. E. Barnard, food and drug commissioner, Indianapolis; Synopsis of A. Ph. A. Model Pharmacy Law, A. F. Sala, Winchester; A Practical Prescriptionist, J. W. Donaldson, Indianapolis; Pharmacy for pharmacists, J. A. Aubry, Hammond; Colloid Solutions, Prof. Edward T. Niles, Indianapolis; Salesmanship and Store Management, A. J. Frazier, Muncie; Arrangement of the Modern Drug Store, M. P. Schwartz; Influence of the A. Ph. A., Prof. C. B. Jordan, Lafayette. Papers were also read by Prof. George D. Timmons, of Valparaiso, and Prof. C. C. Sherrard, of Angola. Dr. F. T. Wilcox, of LaPorte, spoke on Mutual Interests, and J. J. Keene, United States inspector, gave a talk on the United States Narcotic Law.

The new officers are: President, Charles Genolin, Nashville; vice-presidents, W. S. Margowski, Delphi; A. J. Frazier, Muncie; Ira White, South Bend; secretary, William F. Werner, Indianapolis; treasurer, Frank H. Carter, Indianapolis. Executive committee: J. A. Aubrey, Hammond; J. Lovett, Huntington; Wood Wiles, Bloomington.

The next meeting will be held at Indianapolis.

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MICHIGAN ASSOCIATION.

Grant W. Stevens, in his presidential address to the Michigan State Pharmaceutical Association held at Grand Rapids, reviewed the work of the Association and touched upon plans for legislative work of the coming year.

Thos. H. Potts, of the N. A. R. D., in discussing the report of J. H. Webster, chairman of the legislative committee, spoke for uniform laws. Governor W. N. Ferry in an address advocated more reasonable hours in drug stores. Professor Schlotterbeck spoke on the practical side of the drug business.

The following officers were elected: President, C. H. Jongejan, Grand Rapids; vice-presidents, W. H. Fox, Coldwater; Roy Collins, Frankfort; treasurer, John Steketee, Grand Rapids; secretary, D. D. Alton, Fremont.

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MISSISSIPPI ASSOCIATION.

While from the numerical standpoint of additions to the membership, other associations have passed the mark reached by the Mississippi Pharmaceutical Association, relatively the latter increased its membership by a larger percentage than any other. One hundred and seventy-five new members joined the ranks.

President J. C. McGee criticized the stamp tax, spoke in favor of the Harrison law, advocated the passage of the Association Pharmacy bill, recommended the Stevens bill for regulation of the medicine peddler. He endorsed the proposal of having the House of Delegates of the A. Ph. A. become a central organization of state associations.

The following officers were elected to serve during the ensuing year: President, H. M. Faser, Oxford; first vice-president T. C. Matthews, Leland; second vice-president, Charles Watts, Clarksdale; secretary-treasurer, Miss Flora Scarborough, Laurel, re-elected.

Meridian was selected as the next place of meeting.

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MASSACHUSETTS ASSOCIATION.

The thirty-fourth annual meeting of Massachusetts State Pharmaceutical Association met in Springfield June 22 to 24.

President Campbell advocated conservative legislation, favored the Stevens bill, patent law reform and opposed methods of sale, which in effect were nothing more than cutting the price, such as premiums, trading stamps, etc.

The following officers were elected: President, John T. Harper, Great Barrington; vice-presidents, William Hardie, Fall River; W. C. B. Merriam, Springfield, and Walter S. Doane, Worcester; secretary, James F. Guerin, Worcester; treasurer, James F. Fin-

neran, Boston; trustees of permanent fund, William F. Sawyer, Boston; T. E. Mole, Adams; James W. Cooper, Plymouth; for appointment to the state board of pharmacy, James F. Hayes, Fitchburg; George Carroll, Gardner; Frederick Brandes, Worcester; for appointment to the state board of health, Philip V. Erard, Springfield; William M. Curtis, Boston.

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DELAWARE ASSOCIATION OFFICERS.

The following will preside over the affairs of Delaware Pharmaceutical Association during this year: President, Albert Daugherty, Wilmington; vice-presidents, James T. Challenger, New Castle; James W. Wise, Dover; H. P. Luff, Felton; secretary, Miss Norah V. Brendle, Wilmington; treasurer, Oscar C. Draper, Wilmington. Board of directors: John M. Harvey, Wilmington; Erdman Hoffman, Wilmington; George W. Rhoades, Newark; W. H. Chambers, Lewes; James T. Challenger, New Castle.

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GEORGIA ASSOCIATION OFFICERS.

The following officers were elected by Georgia Pharmaceutical Association: President, Samuel E. Bayne, Macon; vice-presidents, Dr. John Wages, Winder; Henry Bell, Albany, and D. A. Solomons, Jr., Savannah; secretary, T. A. Cheatham, Atlanta; treasurer, D. G. Wise, Atlanta.

Atlanta was selected as the next place of meeting.

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NEW JERSEY ASSOCIATION.

The forty-fifth annual meeting of New Jersey Pharmaceutical Association was held June 15 to 18, at Spring Lake.

The legislative committee was instructed to reintroduce a bill in the next legislature, providing for a prerequisite education clause in the Pharmacy law.

A large number of instructive papers were presented and Dr. William Mansfield delivered a stereopticon lecture on The Medicinal Plants Grown in New Jersey. Dr. Mansfield and E. G. Eberle were elected to honorary membership.

The association voted to go to Long Branch next year.

The newly elected officers of the association are: President, Charles J. McCloskey, Jersey City; first vice-president, Garrett J. Byrnes, Maplewood; second vice-president, Daniel H. Hills, Spring Lake; secretary, Frank C. Stutzlen, Elizabeth; treasurer, Edgar R. Sparks, Burlington.

Board of Trade—John G. Block, Jersey City; John D. Case, Somerville; Isaac G. Keuper, Trenton; Harry W. Crooks, Newark; Charles Holzhauer, Newark; Charles J. McCloskey, Jersey City, and Frank C. Stutzlen, Elizabeth.

Legislative Committee: S. D. Woolley, Ocean Grove; David Strauss, Newark; G. M. Beringer, Camden; J. C. Gallagher, Jersey City, and T. S. Armstrong, Plainfield.

The Women's Auxiliary elected the following officers: President, Mrs. Louise Munds; vice-presidents, Mrs. Anna Crooks and Mrs. L. A. Taylor; secretary, Mrs. G. H. Horning, and treasurer, Mrs. A. G. Woolley.

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OHIO ASSOCIATION.

The Ohio State Pharmaceutical Association held its 37th annual meeting at Cedar Point, on Lake Erie, July 13 to 16.

While a large part of the constructive work of the convention was that of reorganization and remodeling the Constitution and By-Laws, the usual volume of current business was transacted with good reports of work accomplished by the more important and active committees. Results of the affiliation with the Ohio Public Health Federation during the past year were most gratifying in the legislative work accomplished. Two laws backed by the Association, a prerequisite and a pharmacy bill to return the enforcement of the pharmacy laws to the Board of Pharmacy, were enacted, and a number of undesirable bills were killed. The pharmacy bill, however, was vetoed by the Governor on a minor point.

The officers elected were: President, J. F. Gallaher, Dayton; First Vice President, F. D. Christian, Sidney; Second Vice President, W. H. Brinker, Bellevue; Secretary, Theo. D. Wetterstroem, Cincinnati; Treasurer, L. W. Funk, Columbus; Member of Council for Five Years, W. M. Bowman, Toledo.

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FLAVORING EXTRACT MANUFACTURERS' ASSOCIATION.

The fifth annual meeting of the Flavoring Extract Manufacturers' Association of the United States of America was held in the Hotel Statler, in Cleveland, O., on July 8, 9 and 10.

Resolutions indorsing the Stevens bill offering price protection for standard articles of commerce, and the model bill prohibiting all manner of misrepresentation, verbal as well as written or printed, were adopted by the members at the business sessions. Frank L. Beggs, of Newark, O., formerly first vice-president, was elected president, succeeding Dr. S. H. Baer, of St. Louis, Mo., who was chosen president of the Association at last year's meeting. Several other changes were made in the other offices, the election resulting as follows: President, Frank L. Beggs, of Newark, Ohio; first vice-president, C. F. Sauer, of Richmond, Va.; second vice-president, J. O. Schlotterbeck, of Rochester, N. Y.; secretary, F. P. Beers, of Earlville, N. Y.; and treasurer, Gordon M. Day, of Milwaukee, Wis., succeeding Robert F. Heekin, of Cincinnati, O.

The Pharmacist and the Law

Recent court decisions, involving fixed prices should not affect the attitude of druggists nor associations anent the Stevens bill.

The Stevens bill is intended to legalize contract for the control of resale prices, irrespective of the patent law, as a protection to good-will and reputation.

The opposers of the measure should convince retail druggists that they must come to the support of this desirable legislation, otherwise it will not be enacted. The opposition includes mail order houses, chain stores, etc.

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PHILADELPHIA DRUGGISTS PROTEST AGAINST TREASURY DECISION No. 2213.

Pointing out that Treasury Decision No. 2213, recently issued, is not only confusing and misleading, but that it discriminates between legitimate pharmacy in favor of patent and proprietary medicines, the Philadelphia Association of Retail Druggists at a largely-attended meeting at the Philadelphia College of Pharmacy, July 9, after a thorough discussion of the decision, adopted the following resolutions:

WHEREAS, In the enforcement of the Harrison law a Treasury Decision No. 2,213 has been issued by the Department of Internal Revenue; and

WHEREAS, In this decision an interpretation of the words "preparations," "remedies" and "prescriptions" have materially changed the exemptions in Article 6 of the law, which is contrary to the thought of those responsible for the enactment of the law; and

WHEREAS, This decision prevents the renewal of prescriptions containing narcotics in any quantities, for both external and internal use, allowing at the same time the sale of patent and proprietary remedies and medicines containing narcotics in quantities exempted; and

WHEREAS, The enforcement of this ruling discriminates between any legitimate pharmacy in favor of patent and proprietary medicines; and

WHEREAS, Webster's definition of "prescription" as used medicinally is defined as a "prescribed remedy," which in Article 6 of the law is exempt; therefore, be it

Resolved, That the Philadelphia Association of Retail Druggists in meeting assembled at Philadelphia, Pa., on July 9, protest against this unjust Treasury decision; and be it

Resolved, That the said decision is contrary to the wording of Article 6 of the act; and be it further

Resolved, That the decision discriminates against ethical pharmacy in favor of patent and proprietary medicines containing exempted narcotics; and be it further

Resolved, That the enforcing of the decision will work a hardship on pharmacists and the medical profession, as well as the laity in the renewing of legitimate prescriptions, calling for narcotics in minute quantities; and be it further

Resolved, That the Philadelphia Association of Retail Druggists, in meeting assembled, protest against the decision, as a whole, and call upon the Hon. W. G. McAdoo, Secretary of the Treasury of the United States, and the Hon. Wm. H. Osborn, Commissioner of Internal Revenue of the United States, for a just and equitable hearing on Treasury Decision No. 2,213; and be it further

Resolved, That a copy of these resolutions be forwarded to the Hon. Secretary of the Treasury of the United States and to the Commissioner of Internal Revenue of the United States.

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FOOD AND DRUG LAW ANNOUNCEMENTS.

The United States Bureau of Chemistry has collected a sample of a product labeled "Oil of Sandalwood, German." Analysis shows this article to consist of a mixture of oil of amyris balsamifera (sometimes improperly called "West Indian oil of sandal-

wood") and oil of copaiba. It does not contain any true oil of sandalwood. The name "Oil of Sandalwood, German," does not represent the facts, and the product is therefore misbranded. It should be labeled as "Oil of Amyris Balsamifera Compound," "Oil of Copaiba Compound," "Oil of Copaiba and Amyris Balsamifera," or vice versa, depending on the oil which predominates in the article. In this connection Food Inspection Decision 63, relating to the use of the word "compound" in names of drug products, should be consulted.

Food Inspection Decisions 142 and 146 do not forbid the use of saccharin in drugs generally. If an article is sold under a name recognized by the United States Pharmacopœia or National Formulary, and such article deviates from the prescribed standard, however, the nature and character of such deviation must be clearly stated on the label, as required by Section 7 of the Federal Food and Drugs Act.

The term "aromatized castor oil" on a label is not considered sufficient to fulfill the requirements of the act in describing a castor oil containing saccharin in addition to certain aromatics. The label should also plainly show that the article varies from the pharmacopœial standard for castor oil in that it is sweetened with saccharin.

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SODA FOUNTAINS AS SOURCES OF INFECTION.

A. J. Lanza of the Public Health Service in an article in Public Health Reports on the interstate migration of tuberculous persons, says that soda-fountain utensils are common eating and drinking devices in the most vicious sense of the word. He has seen advanced consumptives at soda fountains, and as soda fountains are a common rendezvous for children, the danger is apparent. Soda-fountain attendants are likely to be careless in the handling and washing of cups, spoons and glasses, and he has observed on more than one occasion advanced consumptives put down glass and spoon which were then carelessly rinsed in standing water and placed on the shelf for the next customer. He says that in hotels, cafés and other eating places tableware is generally cleaned in machines, or at least soap and hot water are used, and while potentially sources of infection, the danger would be less than by the careless rinsing that suffices at soda fountains.

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HABIT-FORMING DRUGS—HEROIN—SALE BY CLERK.

Appeal was made from a conviction of unlawfully selling morphine, the trial court having directed the jury to return a verdict of guilty. The New Jersey act upon which the indictment was based (P. L. 1908, p. 399), reads as follows: "Any person who shall sell, give away, furnish or dispose of the alkaloid cocaine, or its salt, alpha or beta eucaine, or their salts, opium, morphine, codeine, chloral or any of the derivatives of chloral, or who shall sell, give away, furnish or dispose of any admixture of cocaine or eucaine or any patent or proprietary remedy containing cocaine or eucaine, except on the written prescription of a duly licensed and practicing physician, shall be guilty of a misdemeanor." The defendant was a druggist in Jersey City, and a graduate of a recognized college of pharmacy. The alleged commission of the offense charged consisted in the fact that a clerk in the defendant's employ sold a bottle containing 100 tablets, each tablet containing one-twelfth of a grain of "heroin," to one Courtney. The clerk when employed had been instructed by the defendant to sell no drugs contrary to law. Courtney, it seemed, had made prior purchases of the drug at the defendant's store, but the defendant testified that when these sales were made he was not informed that heroin was included in the category of habit-forming drugs, and it was held to be inferable from the testimony that the general discovery of that fact has been only of comparatively recent date.

To bring the commission of the offense within the language of the statute, the state offered expert testimony to show that heroin is in fact morphine. Expert chemists in behalf of the defendant testified that heroin and morphine are two distinct drugs, the latter being a very old alkaloid, and the former a comparatively recent derivative of morphine, and that each responds differently to recognized chemical tests. It was also in evidence that the two drugs respond differently on the human system, and that heroin may be used with benefit for throat ailments. The court did not deem it necessary to say

more in the disposition of the case than that the statute in question does not include in its categorical statement of the inhibited habit-forming drugs the drug known as heroin. If it were known and in existence by name as a habit-forming drug at the time of the enactment of the prohibiting law, it must be assumed that the Legislature purposely excluded it. If it were not known, and not in existence, at that period, it was equally manifest that the Legislature did not have it in mind in its generic designation of habit-forming drugs. But if it were conceded that the language of the act included heroin among the derivatives of the drugs specifically condemned, the difficulty of sustaining the conviction lay in the fact that the defendant personally did not sell the drug, that he had given orders to his clerk not to sell habit-forming drugs, and that when he learned that this drug was included in the class of habit-forming drugs, he ceased to sell it. This testimony presented an issue of fact as to the defendant's guilt which should have been left to the jury to determine. The judgment of conviction was therefore reversed.

State v. Norwood, New Jersey Supreme Court, 93 Atl. 683.

Council Business

COUNCIL LETTER No. 28.

Philadelphia, Pa., July 2, 1915.

To the Members of the Council:

Gentlemen—*Motion No.* 44 (*Election of Members; Applications No.* 175 *to No.* 215, *inclusive*), has received a majority of affirmative votes.

Motion No. 45 (*Election of Members*). You are requested to vote on the following applications for membership:

No. 216. Harry Vogel Becker, 576 Mission St., San Francisco, Cal., rec. by Fred I. Lackenbach and K. B. Bowerman.

No. 217. William J. Clancy, 657 First St., LaSalle, Ill., rec. by Wm. B. Day and C. M. Snow.

No. 218. John W. Forbing, 2435 Brown St., Omaha, Neb., rec. by H. F. Gerald, M. D., and I. Curtis Arledge.

No. 219. Harry Alexander Shapiro, 139 Manning St., Portsmouth, N. H., rec. by John G. Godding and Theodore J. Bradley.

No. 220. Oakley Smith Skinner, Windsor, Vermont, rec. by C. Herbert Packard and Theodore J. Bradley.

No. 221. Armand Merrill Dupaul, Hamilton St., Southbridge, Mass., rec. by Theodore J. Bradley and Fred W. Archer.

No. 222. James Weston Pratt, 5 Summer St., Quincy, Mass., rec. by Howard H. Smith and Theodore J. Bradley.

No. 223. Florin Joseph Amrhein, 61 Fort Ave., Roxbury, Boston, Mass., rec. by Elie H. LaPierre and Theodore J. Bradley.

No. 224. George Weldon, Paris, Idaho, rec. by H. H. Whittlesey and Wm. B. Day.

No. 225. Henry Louis Kath, West 85th St., near 32d St., Seattle, Wash., rec. by C. W. Johnson and Forest J. Goodrich.

No. 226. Harry Breslaw, 64 West 144th St., New York, N. Y., rec. by Otto Raubenheimer and Jeannot Hostmann. Best Thesis Presented in Chemistry, University State of New Jersey, "Tea as Sold in the American Market."

No. 227. Jacob Bankoff, 345 Hopkinson Ave., Brooklyn, N. Y., rec. by Otto Raubenheimer and Jeannot Hostmann. Best Thesis Presented in Balneology, University State of New Jersey, "Mineral Springs of the Fifth District of New Jersey."

No. 228. Charles Mueller, 1304 John St., Guttenberg, N. J., rec. by Otto Raubenheimer and Jeannot Hostmann. Best Thesis Presented in History of Pharmacy, University State of New Jersey, "Contribution to the Oldest History of Pharmacy."

No. 229. Abraham Rosenberg, 524 East 12th St., New York, N. Y., rec. by Otto Raubenheimer and Jeannot Hostmann. Best Thesis Presented in Physiological Chemistry, University State of New Jersey, "Variations of Carbohydrates in the Urine in Diabetes."

No. 230. Reuben Podolsky, 885 Jennings Ave., New York, N. Y., rec. by Otto Raubenheimer and Jeannot Hostmann. Best Thesis in Pharmacy, University State of New Jersey, "Improvements in Galenical Preparations of Digitalis."

No. 231. William C. Royse, 431 South Fifth St., Terre Haute, Ind., rec. by A. H. Dewey and W. F. Gidley.

No. 232. Edward Rudy Gifford, 23 Robin Hood St., Dorchester, Mass., rec. by Leon A. Thompson and Theodore J. Bradley.

No. 233. Fred Martin Neninger, 513 South Warren St., Syracuse, N. Y., rec. by Willis F. Gregory and Wm. B. Day.

No. 234. Jacob Bernstein, 45 Peckham St., Buffalo, N. Y., rec. by Willis F. Gregory and Wm. B. Day.

No. 235. Hugh Adelbert Judd, 836 Main St., Buffalo, N. Y., rec. by Willis F. Gregory and Wm. B. Day.

No. 236. Bernard Edward Tracy, 72 West

North St., Ilion, N. Y., rec. by Willis F. Gregory and Wm. B. Day.

No. 237. Isaac Benjamin Bloomfield, 1638 North 8th St., Philadelphia, Pa., rec. by J. W. Sturmer and F. E. Stewart.

No. 238. George V. Whitney, M. D., 2206 Freeman St., Houston, Texas, rec. by E. G. Eberle and R. H. Walker.

No. 239. Frank B. Dwyer, 1320 Washington Ave., Houston, Texas, rec. by R. H. Walker and E. G. Eberle.

No. 240. Elbert S. Dunn, Neches, Texas, rec. by E. G. Eberle and R. H. Walker.

No. 241. James G. Mauzy, 511 Main St., Plattsmouth, Neb., rec. by Frederick G. Fricke and A. V. Pease.

No. 242. Claude Aikman, Jenks, Oklahoma, rec. by Charles H. Stocking and Edwin DeBarr.

No. 243. William Eischeid, Norman, Okla., rec. by Charles H. Stocking and Edwin DeBarr.

No. 244. E. E. Weiss, Higgins, Texas, rec. by Charles H. Stocking and Edwin DeBarr.

No. 245. Oscar G. Salb, care John T. Milliken & Co., St. Louis, Mo., rec. by J. H. Beal and J. W. England.

No. 246. Charles W. Antony, 207 Tuscarawas St., W., Canton, Ohio, rec. by Frank Cain and J. H. Beal.

No. 247. Raymond Keith O'Brien, 222 N. Craig St., Pittsburgh, Pa., rec. by J. A. Koch and A. F. Judd. Prize membership—Materia Medica—by Dr. A. F. Judd, Pittsburgh College of Pharmacy.

No. 248. Elmer Bernard Deiss, 1436 Fifth Ave., Pittsburgh, Pa., rec. by J. A. Koch and Carl Saalbach. Prize membership—Pharmacy—by Dr. Louis Saalbach, Pittsburgh College of Pharmacy.

No. 249. Charles Hornor Troxell, 130 West Fourth St., Weston, W. Va., rec. by J. A. Koch and Carl Saalbach. Prize membership—Pharmaceutical Products—by Dr. Louis Saalbach, Pittsburgh College of Pharmacy.

No. 250. Henry J. Strauch, 848 East Ohio St., Pittsburgh, Pa., rec. by J. A. Koch and Carl Saalbach. Prize membership—Pharmacognosy—by Dr. L. K. Darbaker, Pittsburgh College of Pharmacy.

No. 251. Henry A. Stype, 658 Lincoln Ave., East Liverpool, Ohio, rec by J. A. Koch and Carl Saalbach. Prize membership—Organic Chemistry—by Dr. J. A. Koch, Pittsburgh College of Pharmacy.

No. 252. Herman Henry Blomeier, 439 Ninth Ave., New York, N. Y., rec. by Louis Berger and J. Leon Lascoff.

No. 253. William Franklin Baum, 318 Vermilion St., Danville, Ill., rec. by Wm. B. Day and C. M. Snow.

No. 254. Auguste Boas, 528 Cambridge St., Allston, Mass., rec. by Albert J. Brunelle and William S. Flint.

No. 255. Joseph Kahn, Phar. D., 110 Bay Seventeenth St., Brooklyn, N. Y., rec. by Caswell A. Mayo and Jeannot Hostmann.

No. 256. Elvin R. Bergren, Essex, Iowa, rec. by Wilber J. Teeters and R. A. Kuever.

J. W. ENGLAND,
Secretary of the Council.

415 N. Thirty-third Street.

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WAR DEPARTMENT.

List of changes of stations covering period ending June 30, 1915, in the cases of Sergeants First Class, and Sergeants:

SERGEANTS FIRST CLASS.

John O. Perry, from Ft. H. G. Wright to Ft. Michie.

Adolph H. Lienhart, from Ft. Michie to Ft. H. G. Wright.

Yarnall L. Bowers, from Ft. Adams to Ft. St. Michael.

Harry N. Fuller, from Ft. St. Michael to Ft. Lawton for assignment.

Shelby G. Cox, from Ft. Omaha to Ft. Gibbon.

James E. Young, from Walter Reed General Hospital to Fairbanks, Alaska.

Richard A. Wood, from Ft. Gibbon to Ft. Lawton for assignment.

Albert G. Fisher, from Fairbanks, Alaska, to Ft. Lawton for assingment.

George W. Wersebe, from Ambulance Company No. 3, to the Philippine Department.

Walter H. Cook, from the Hawaiian Department to furlough in the U. S.

Robert G. Kennedy, from the Philippine Department to Ft. Riley.

Thomas G. Williams, from the Philippine Department to Ambulance Co. No. 1.

Glen D. Gorton, from Ft. Riley to Ft. Leavenworth.

William D. Walters, from Ft. Wadsworth to the Philippine Department.

William George, from Ambulance Company No. 1 to the 11th Infantry Hospital.

Edward W. Pennypacker, from the 11th Infantry Hospital to Ft. Wadsworth.

Frank O. Nicodemus, from the 2d Division to Ft. Des Moines.

Robert S. Ferguson, from Ft. Des Moines to the 2d Division.

SERGEANTS.

Horace J. Caterer, from Ft. Jay to the U. S. Mine Planter "General Samuel M. Mills."

William Alexander, from the U. S. Mine Planter" General Samuel M. Mills to Ft. Jay.

Alvis C. Waller, from the Letterman General Hospital to the Philippines Department.

William Q. Fancher, from the Letterman General Hospital to the Philippines Department.

Melville B. Hamilton, from the 2d Division to Ft. Omaha.

Isaac N. Hendrixson, from the Army and Navy General Hospital to Ambulance Company No. 3.

Marshall Ellis, Jr., from Ft. Michie to Ft. Terry.

George Bruley, from Ft. Snelling to Ft. Brady.

Benjamin F. Mason, from Ft. Brady to Ft. Snelling.

John L. Morgan, from Ft. Baker to the Presidio of San Francisco.

Schiller Scroggs, from Ft. Logan to Ambulance Company No. 1.

Patrick Darby, from Ft. Robinson to the 2d Division.

Charles W. Jensen, from Ft. Hamilton to the Cable Boat "Joseph Henry."

Elmer Jeen, from the Philippine Department to the U. S. on furlough.

William Bowman, from the Philippine Department to the U. S. on furlough.

August H. Waitz, from Vancouver Barracks to Ft. Flagler.

Clarence K. Aikin, from Ft. Oglethorpe to Ft. Barrancas.

Charles L. Briscoe, from Ft. Hancock to the Philippine Department on August Transport.

Harry E. Lyons, from Ft. Hancock to the Philippine Department on August Transport.

Olaf C. Larsen, from the Cable Boat "Joseph Henry" to Ft. H. G. Wright.

Joseph Stahl, from Ambulance Company No. 7 to Ft. Bliss.

DETERMINATION OF UREA IN BLOOD.

The urea in blood may be determined with facility and accuracy by precipitating it as the urea-xanthydrol compound by means of Fosse's method. In order that the precipitate shall be pure, it is necessary first to eliminate any albumin present. This is done by means of the following modified Tanret's reagent: Mercuric chloride, 2.71 gms; potassium iodide, 7.2 gms.; glacial acetic acid, 66.6 mils; water to make up to 100 mils. Ten mils of serum of the blood to be tested and 10 mils of this reagent are mixed in a centrifuge tube and spun. About 17 mils of liquid will be obtained. An aliquot part of this, say 15 mils, is treated with an equal volume of glacial acetic acid, and then with a volume of 1:10 methyl alcohol solution of xanthydrol equal to one-twentieth of the total volume, which in this case would be 1.5 mils. After one hour the precipitate is collected on the filter pump, preferably on the special form of filter devised by the author, then washed with alcohol, dried, and weighed. The amount of urea per litre of urine may be found from the following formula:

$$\frac{\text{Weight}}{7} \times \frac{20}{15} \times 100$$

—*R. Fosse, A. Robyn, and F. Francois (Comptes rend.*, 1914, 159, 367, *through Pharmaceutical Journal.)*

Changes of Address

All changes of address of members should be sent to the General Secretary promptly.

The Association will not be responsible for non-delivery of the Annual Volume or Year Book, or of the JOURNAL unless notice of change of address is received before shipment or mailing.

Both the old and the new address should be given, thus:

HENRY MILTON,
From 2342 Albion Place, St. Louis, Mo.
To 278 Dartmouth St., Boston, Mass.

Titles or degrees to be used in publications or in the official records should be given, and names should be *plainly* written, or typewritten.

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LADISH, ERICH H.,
From 2015 Cleveland Ave., Chicago, Ill. (Residence).
To 172 W. North Ave., Chicago, Ill. (Business).

NOAKS, RICHARD S.,
From Dover, Tenn.
To National Cemetery, City Point, Va.

CHAPMAN, THOS. A.,
From Portland, Ore.
To residence unknown.

WAITZ, AUGUST H.,
From Mindanao, P. I.
To residence unknown.

BROWN, ROBT. O.,
From Cooper, Texas.
To 612 Eighth St., Wichita Falls, Texas.

JACKMAN, W. F.,
From 69 Medbury Ave., Detroit, Mich.
To 178 Colburn Ave., Detroit, Mich.

PORTMANN, LEO E.,
From 613 Sandal St., Canton, Ohio.
To 212 McKinley Ave., S. W., Canton, O.

FLOYD, HENRY B.,
From Box 321, Washington, D. C.
To National College of Pharm., 808 I St., N. W., Washington, D. C.

SCHULTZ, HENRY S.,
From 1607 Transportation Bldg., Chicago, Ill.
To 1625 Transportation Bldg., Chicago, Ill.

ACKERMANN, ADOLPH H.,
From 148 Dudley St., Boston, Mass.
To 313 Union St., Lynn, Mass.

MILLER, CHAS. E.,
From Canacao, P. I.
To Navy Yard Dispensary, Norfolk, Va.

PFAFFLIN, H. A.,
From 2729 N. Penn. Ave., Indianapolis, Ind.
To 3711 E. Wash St., Indianapolis, Ind.

SCOTT, E. B.,
From 109 Maryland Ave., N. E., Washington, D. C.
To 2016 P. St., N. W., Washington, D. C.

WEISE, CARL E.,
From 2705 West End Ave., Nashville, Tenn.
To 2704 West End Ave., Nashville, Tenn.

MOULDER, BETTIE L.,
From Linn Creek, Mo.
To 1429 Ocean Front, Santa Monica, Cal.

CLARK, A. P. (Mrs.),
From 140 So. Beach St., Daytona, Fla.
To 124 So. Beach St., Daytona, Fla.

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A business should be known for the honesty and integrity of those who are behind it,—the kind of honesty that is taken for granted; the kind that shows our acts to be automatically honest, as if from habit, and it cannot be otherwise, for as soon as we begin to notice that we are honest, or call attention to the fact, and be much impressed by our choice of methods, at that moment we are under suspicion, for honesty, from that moment, has ceased to be a habit.—Caxton.

Wanted—Natural History Books.

The Lloyd Library, 309 West Court Street, Cincinnati, Ohio, is interested in the purchase of books relating to all branches of natural history. Book dealers issuing catalogues relating to these subjects are requested to send them to our address. Offers regarding the sale of books on these subjects will be considered at any time.

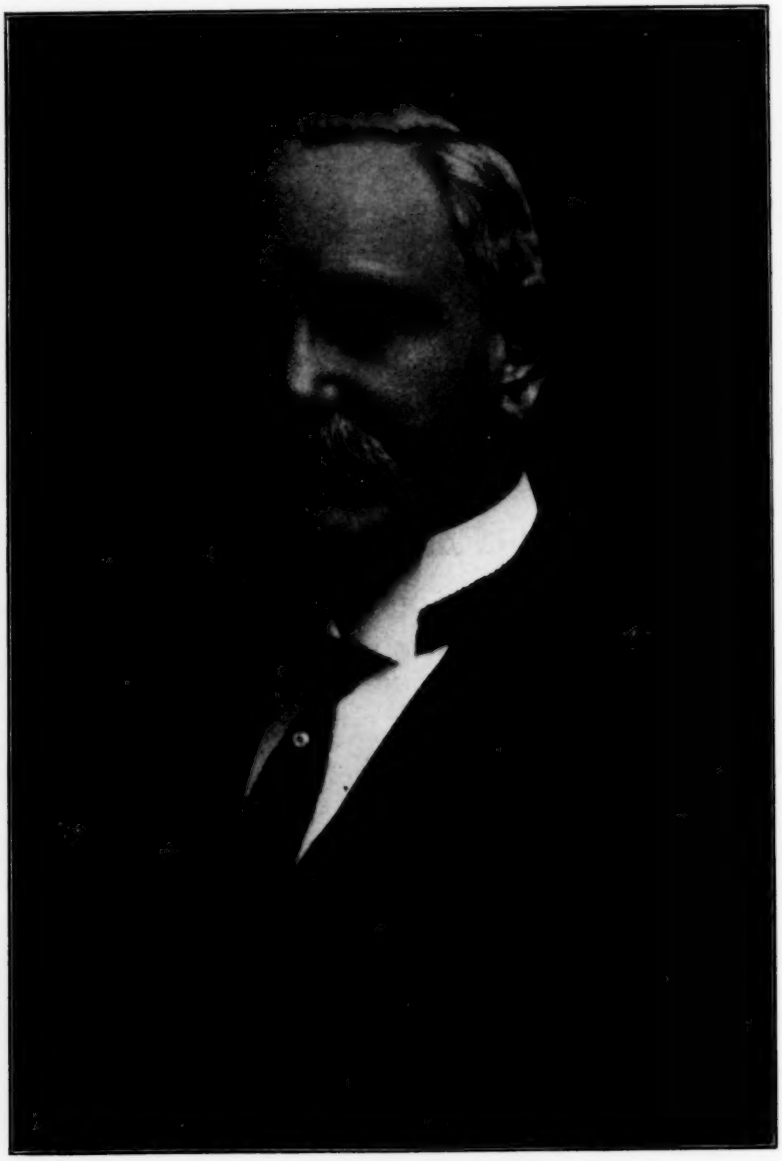
THE LLOYD LIBRARY, 309 WEST COURT ST., CINCINNATI, OHIO.

WILLIAM C. ALPERS, Cleveland, Ohio

Sixty-fourth President of the American Pharmaceutical Association

Will Preside at the 1916 Meeting, to be Held in Atlantic City, N. J.

(For Sketch see page 1086)



WILLIAM C. ALPERS, SC. D.,
President of the
American Pharmaceutical Association